Reducing children's social anxiety symptoms through a parent-administered cognitive bias modification intervention: a feasibility randomised controlled trial

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Systematic Literature Review

Empirical Research Project

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Chapter 1

Systematic Literature Review

Examining the association between parenting and social anxiety in children and adolescents: A systematic literature review

Supervised by Dr Jennifer Lau and Professor Cathy Creswell

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Abstract

Social anxiety in young people is common and impairing. Maladaptive parenting has been associated with the onset and maintenance of anxiety in children and adolescents, but the extent and nature of this association with regard to social anxiety has not yet been comprehensively examined. A systematic review was conducted of studies investigating associations between parenting and social anxiety disorder and symptoms in children and adolescents, which identified 37 studies. The results of these studies were mixed, but overall provided support for an association between dimensions of parental control, rejection and anxious rearing and child and adolescent social anxiety. Methodological shortcomings of the studies and limitations of the review mean that these results should be interpreted with some caution. Future studies should be conducted in clinical populations, using longitudinal designs and independent assessment methods, in order to clarify the impact of maladaptive parenting on offspring social anxiety. This may further inform theoretical models and the development of effective treatments for social anxiety in children and adolescents.

Introduction

Social anxiety in children and adolescents

Social anxiety disorder (SAD) is one of the most common mental health problems in childhood and adolescence, and without treatment tends to persist into adulthood, making it one of the most common disorders across the lifespan (Grant et al., 2005; Kessler et al., 2005). It is associated with high rates of distress, disability, and comorbidity with other emotional and behavioural disorders in children, adolescents and adults (Beidel et al., 1999; Erath et al., 2007; Kessler, 2003; Mazzone et al., 2007). There is also evidence that, among those who do not meet diagnostic threshold for SAD, lower levels of subthreshold social anxiety symptoms (SAS) may still cause substantial impairment (Fehm et al., 2008; Merikangas et al., 2002; Van Roy et al., 2009). Although research shows that psychological therapies (especially cognitive therapy) for SAD in adults are effective (Clark et al., 2006), intervention trials with children and adolescents with SAD suggest that they may respond less well to current psychological treatments (Compton et al., 2014; Ginsburg et al., 2011; Hudson et al., 2015), and it is therefore important to examine age-specific factors that may be relevant. As such, developing a greater understanding of the factors which may contribute to the development and maintenance of social anxiety (SA) in children and adolescents is of importance not only theoretically, but also clinically, and may contribute to the improvement of treatment outcomes for young people.

The role of parenting in child and adolescent social anxiety

There is now substantial evidence that SA aggregates in families, and a large body of research has explored the parental and family factors which may contribute to this intergenerational transmission of vulnerability (see Hudson & Rapee, 2000; Knappe et al., 2010). Research has focussed particularly on three factors: genetics, parental anxiety and psychopathology, and parenting, and there is evidence that each of these may play a role in the development and/or maintenance of SA in offspring (e.g. Fyer et al., 1995; Hettema et al., 2005; McLeod et al., 2007; Merikangas et al., 2003; Scaini et al., 2014). The specific contribution of each of these factors is unknown, and theoretical models suggest that the aetiology of SA is likely to be multifactorial and complex (e.g. Rapee & Spence, 2004). SA heritability estimates from genetic studies vary between approximately 10-60%, and these studies suggest that environmental factors likely play a crucial role (Scaini et al., 2014). Given the central importance of parents in young people's lives, parenting has been proposed and explored as one such environmental factor which may exert significant influence on the onset and maintenance of child and adolescent SA (Knappe et al., 2010). Furthermore, parenting is likely to be more amenable to modification, and as such is a factor which could potentially be targeted in the treatment of SA in young people.

Research on parenting and child psychopathology has generally focussed on the two broad dimensions of control versus autonomy-granting, and rejection versus acceptance and warmth (Rapee, 1997). Parental control is defined as a pattern of overprotective and restrictive parenting practices, often used in an attempt to protect the child from situations which they might find challenging or stressful. This tends to result in the child being overly regulated by, and dependent upon, the parent in his/her decisions and actions, which is hypothesised to have a negative impact on the child's coping abilities and sense of self-efficacy. For instance, a parent may protect a socially anxious child from exposure (and consequent habituation) to new or anxiety-provoking situations (e.g. social or performance situations), which may additionally hinder the development of social skills through positive social interactions (Rapee & Spence, 2004). This in turn is likely to reinforce and increase the child's sensitivity to social threat and anxiety. The second construct, rejection, is characterised by parental criticism and hostility towards the child, and a lack of parental acceptance, warmth, responsiveness and emotional involvement. Research suggests that a parenting style characterised by high levels of rejection and low levels of acceptance may undermine children's emotion regulation and increase their anxiety vulnerability (McLeod et al., 2007; Wood et al., 2003). Specifically, parental rejection, criticism and lack of warmth may contribute to the child developing greater self-consciousness, sensitivity to social appraisal and fear of negative evaluation by others, all of which are considered to play a role in SA (Hudson et al., 2004).

Findings from some substantial recent cross-sectional and longitudinal studies on child and adolescent SA suggest an association with both parental control and rejection (Knappe et al., 2009c; Rowe et al., 2015; Rudolph & Zimmer-Gembeck, 2014). These findings are supported by the results of retrospective studies in adult populations, which have shown that adults with SA recall their parents as being more overprotective and critical, and less warm (e.g. Spokas & Heimberg, 2008). Previous reviews and meta-analyses have consistently found an association between child and adolescent anxiety and dimensions of parental control (Ballash et al., 2006; McLeod et al., 2007; van der Bruggen et al., 2008; Waite et al., 2014; Wood et al., 2003), although these studies have not been specific to SA, but rather have pooled data across different anxiety disorders and symptoms as well as general measures of anxiety. Van der Bruggen et al (2008) found a fairly substantial effect of parental control on offspring anxiety (effect size 0.58), although McLeod et al (2007) found a more moderate effect size (0.25), accounting for approximately 6% of the variance in child anxiety. Findings of these reviews have been less consistent regarding the relationship between child anxiety and dimensions of parental rejection, although McLeod et al (2007) found an effect size of 0.20, which accounted for approximately 4% of the variance in child anxiety. Although these meta-analyses have not

looked specifically at SA, van der Bruggen et al (2008) reported finding larger effect sizes in studies investigating child and adolescent SA (effect size 0.76) than in studies examining unspecified anxiety or general internalising symptoms (effect size 0.52), suggesting that further investigation of parenting in child and adolescent SA is warranted.

A third, related aspect of parenting is often referred to as 'anxious rearing'. This category groups together a heterogenous collection of parenting factors, and perhaps for this reason has arguably received less attention in the parenting literature than control and rejection. However, it encompasses parenting factors which may be particularly relevant in the development and maintenance of SA. The concept of anxious rearing draws on social learning theory, and is based on the idea that children may develop anxiety-related cognitions and behaviours through parental modelling and reinforcement of anxious responses (Field, 2006; Ollendick & Hirshfeld-Becker, 2002). There is evidence that this may apply both to SA-related behaviours, such as avoidance of social situations which are perceived as anxiety-provoking or threatening, and to SA-related cognitive biases, such as the negative interpretation of ambiguous information in social situations, and fear of negative evaluation (Creswell et al., 2006; Field & Cartwright–Hatton, 2008; Lester et al., 2009; Schreier & Heinrichs, 2010). Aspects of anxious rearing that have been particularly associated with child SA are parental modelling, encouragement and facilitation of socialisation versus isolation, emphasising the importance of others' opinions, and expressing shame about child anxiety and behaviour (Caster et al., 1999; Johnson et al., 2005). Again, these findings are supported by studies in adults with SA, who recall their parents as being less sociable, having a greater tendency to isolate them from social interaction and to emphasise the opinions of others, and expressing more shame about their shyness and performance (Bruch et al., 1989; Rapee & Melville, 1997).

Aims and objectives of current review

The current review aimed to examine the associations between SA in children and adolescents and parenting. As outlined above, a number of previous reviews and meta-analyses have examined associations between child anxiety and parenting (Ballash et al., 2006; McLeod et al., 2007; van der Bruggen et al., 2008; Waite et al., 2014; Wood et al., 2003), but none of these has been specific to SA. Both theoretical models and the empirical literature discussed above suggest that particular maladaptive parenting practices may be relevant to the development and maintenance of child and adolescent SA, but the relative contributions of different parenting styles and behaviours remain unknown. Given the increasing focus on clarifying the specificity of risk factors for individual anxiety disorders (e.g. Hughes et al., 2009), the current review is timely, and may help to further understanding of the parental factors which are

implicated in child and adolescent SA. This in turn may contribute to greater understanding of how to treat SA in young people most effectively.

The review aimed to capture the results of studies examining associations between parenting and offspring SA as comprehensively as possible. As such, both cross-sectional and longitudinal studies were included, with the latter having particular importance for examining prospective associations between these variables. Studies were eligible if they used a measure of either SAD (assessed through diagnostic interview) or SAS (assessed through questionnaire measures); and a measure of either parental behaviours (assessed through observed and coded parent-child interaction) or parenting style (assessed through questionnaire measures). Previous research has identified various methodological and demographic factors which may impact on the strength of observed associations between child anxiety and parenting (McLeod et al., 2007; van der Bruggen et al., 2008). Although it was beyond the scope of the current review to examine these in detail, effort was therefore made to differentiate between these different factors in the synthesis of results.

The current review aimed to investigate cross-sectional and longitudinal associations between child SAD/SAS, and parenting style and behaviours. Specifically, the review sought to examine the nature and strength of associations between child SAD/SAS and dimensions of: i) parental control; ii) parental rejection, and iii) anxious rearing, as well as additional parenting factors which may not fall under these categories.

Methods

Search strategy

A literature search was conducted to identify studies presenting associations between child and adolescent social anxiety (including SAD and SAS), and parenting (including parenting style and behaviours). Electronic searches were conducted in November 2016 and again in February 2017 using the databases Embase (1947-present), Medline (1946- present), Psycinfo (1806- present) and Web of Science (1900- present). The search terms were adapted from those used in previous reviews (McLeod et al., 2007; van der Bruggen et al., 2008; Wood et al., 2003), and comprised key terms relating to SA (*social anxiety, social phobia, social fear, social worry, performance anxiety, social/behavioural inhibition, shyness)*, children and adolescents (*child, adolescent, teenager, youth)*, and parents and parenting (*parent, mother, father, maternal, paternal, parenting style, parenting behaviour, rearing).* These were truncated, exploded and combined as appropriate, and mapped terms were included where possible (see Appendix 1.1).

In addition, the reference lists of previous relevant reviews, and of the studies included in the current review, were examined to identify any further potentially relevant studies.

Inclusion criteria

In order to be included in the review, papers had to meet the following inclusion criteria: i) participants aged 18 years or younger, or the equivalent year or grade of education (at baseline measurement for longitudinal studies); ii) a measure of SAS or clinical diagnosis of SAD in children or adolescents (studies using only a measure of shyness or behavioural inhibition were excluded); iii) a measure of current parenting in relation to the target child (studies of general family environment or attachment were excluded, as were studies using retrospective measures of parenting); iv) associations between child SA and parenting tested and reported statistically; v) written in English; vi) published as a full paper in a peer-reviewed journal.

Study selection

The search strategy returned a total of 6270 papers, with 2723 articles remaining after duplicates were removed. These papers were independently screened by two reviewers in two stages. In the first stage, titles and abstracts were screened, and in the second stage, full texts were accessed to assess eligibility. Any disagreements regarding eligibility for the review were discussed with a third reviewer and a consensus decision reached. Figure 1.1 shows the PRISMA flowchart (Moher et al., 2009) outlining the number of studies included at each stage of the review process. Where studies met multiple exclusion criteria, the primary criterion is given.

Data extraction and synthesis

Key characteristics of the included studies were extracted based on the PRISMA guidelines (Moher et al., 2009), including study design, sample size and population, participant age and gender, and methodology. These are summarised in Table 1.1. The extracted data were then reviewed using a descriptive approach to synthesise the key findings, which are summarised in Table 1.2. Effect sizes were examined for each study. Many studies reported effect sizes in terms of Pearson's correlation coefficient *r*. Where studies conducted group comparisons and did not report effect sizes, or reported effect sizes not in terms of *r*, these were calculated as *r* where possible, in order to enable comparison across studies (for some studies, this was not possible due to the necessary data not being available). These were then interpreted using Cohen's (1988) definition of effect sizes (*r* of 0.1 as 'small', *r* of 0.3 as 'medium' and *r* of 0.5 as 'large').

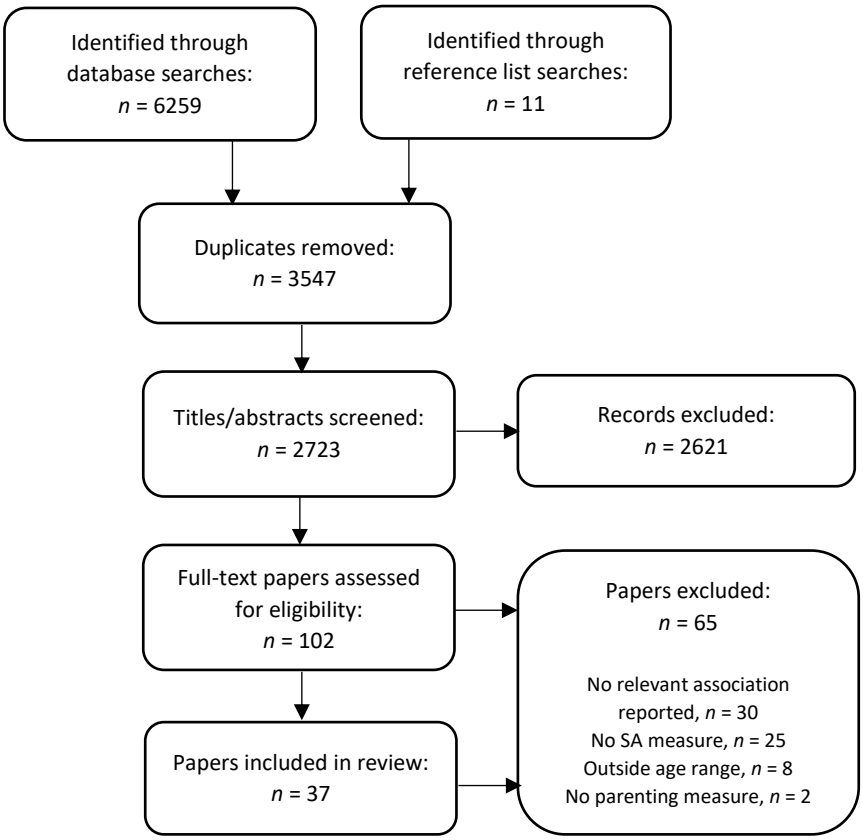

Figure 1.1. PRISMA diagram

In line with previous reviews, the results of the included studies were categorised and reviewed according to the dimensions of parental control, rejection and anxious rearing, where relevant. The subdimensions and parental behaviours falling under each of these dimensions are given in Table 1.3 (as defined by the included studies). Studies examining aspects of parenting which were not considered to fall under these categories were described separately.

Quality assessment

Two reviewers independently assessed the methodological quality, and the quality of the data reported relevant to the current review questions, for each study included in the review, using an adapted version of the quality assessment tool developed by Kmet et al (2004). This tool was adapted to include only those questions relevant to the studies in the current review, providing a nine-item checklist which has been used in similar previous reviews (e.g. Williamson et al., 2017). This principally involved the assessment of study design, participant recruitment and selection, sample size, outcome measures and analytic methods (for full checklist see Appendix 1.2). Studies were scored on a three-point scale depending on the extent to which each criterion was met ('yes'=2, 'partial'=1, 'no'=0; see Appendix 1.3), and a summary total score was calculated (see Table 1.2; range of scores 0-18). Any disagreements were resolved with a third reviewer and a consensus score agreed upon.

Table 1.1. Characteristics of included studies

Study	Design	Follow up timepoints	Country of recruitment and study population	Sample size (children)	Participant age range (baseline SA measure)	Participant gender	Parents inc / ref	SA measure	Informant	Parenting measure	Informant
Akinsola & Udoka (2013)	C-S	-	Nigeria Sch	567	7-16	49% M	Both ref	Qu	C	Qu	C
Biller & Zung (1972)	C-S	-	USA Sch	42	9-12	100% F	Mothers ref	Qu	C	Qu	C
Bogels et al (2011)	C-S	-	Netherlands Sch	144	8-12	43% M	Both inc (53% mothers)	Qu	C	Qu	C
Bogels et al (2001)	C-S	-	Netherlands Clin & Sch	190	8-18	48% M	Both inc (53% mothers) and ref	Qu	C	Qu	C&P
Caster et al (1999)	C-S	-	USA Sch	1756	12-17	50% M	Both inc (61% mothers) and ref	Qu	C	Qu	C&P
Cunha et al (2008)	C-S	-	Portugal Comm	180	12-18	26% M	Both ref	Int	I	Qu	C
Festa & Ginsburg (2011)	C-S	-	USA Not stated	63	7-12	52% M	Both inc (92% mothers)	Int Qu	I C	Obs Qu	I C
Fisak & Mann (2010)	C-S	-	USA Sch	336	15-18	33% M	Both ref	Qu	C	Qu	C
Ghazwani et al (2016)	C-S	-	Saudi Arabia Sch	454	15-20	100% M	Both ref	Qu	C	Qu	C
Gray et al (2011)	C-S	-	USA (African-Americans) Sch	266	8-13	45% M	Both ref	Qu	C	Qu	C
Greco & Morris (2002)	C-S	-	USA Sch	48	9-12	52% M	Fathers inc	Qu	C	Obs Qu	I C
Gruner et al (1999)	C-S	-	Netherlands Sch	121	9-12	49% M	Both ref	Qu	C	Qu	C
Gulley et al (2014)	C-S	-	USA Sch	75	9-15	41% M	Mothers inc	Int	I	Obs	I
Huang et al (2012)	C-S	-	USA (Asian Americans) Comm	101	3-5	50% M	Both inc (91% mothers)	Qu	P	Qu	P
Hummel & Gross (2001)	C-S	-	USA Sch	30	9-12	51% M	Both inc (50% mothers)	Qu	C	Obs	I
Hutcherson & Epkins (2009)	C-S	-	USA Comm	100	9-12	100% F	Mothers inc	Qu	C	Qu	C&P
Johnson et al (2005)	C-S	-	USA Sch	3649	9-17	50% M	Both ref	Qu	C	Qu	C

Study	Design	Follow up timepoints	Country of recruitment and study population	Sample size (children)	Participant age range (baseline SA measure)	Participant gender	Parents inc / ref	SA measure	Informant	Parenting measure	Informant
Knappe et al (2009a)	Long	20m, 4yr, 10yr	Germany Pop	1395	14-17	51% M	Both inc (97% mothers)	Int	I	Qu	C
Knappe et al (2009b)	Long	20m, 4yr, 10yr	Germany Pop	1395	14-17	51% M	Both inc (97% mothers)	Int	I	Qu	C
Knappe et al (2009c)	Long	20m, 4yr, 10yr	Germany Pop	1395	14-17	51% M	Both inc (97% mothers)	Int	I	Qu	C
Lewis-Morrarty et al (2012)	Long	7-10yr	USA Comm	176	14-17	49% M	Mothers inc	Int Qu	I C&P	Obs	I
Lieb et al (2000)	Long	20m	Germany Pop	1395	14-17	51% M	Both inc (97% mothers)	Int	I	Qu	C
Loukas (2009)	Long	12m	USA Sch	479	10-14	45% M	Mothers ref	Qu	C	Qu	C
Mellon & Moutavelis (2011)	C-S	-	Greece Sch	1520	9-12	51% M	Both ref	Qu	C	Qu	C
Morris & Oosterhoff (2016)	C-S	-	USA Sch	90	9-12	50% M	Both inc (50% mothers)	Qu	C	Obs Qu	I C
Mousavi et al (2016)	C-S	-	Malaysia Sch	227	13-18	53% M	Both ref	Qu	C	Qu	C
Murray et al (2014)	Long	4m	UK Comm	136	4-5	43% M	Mothers inc	Int	I	Obs	I
Papini & Roggman (1992)	Long	8m, 15m	USA Sch	47	12.6 (*M*)	43% M	Both ref	Qu	C	Qu	C
Rapee (2014)	Long	11y	Australia Pre-Sch	119	12-17	48% M	Mothers inc	Int	I	Obs	I
Rork & Morris (2009)	C-S	-	USA Comm	32	10-13	53% M	Both inc (50% mothers)	Qu	C	Obs Qu	I C
Rowe et al (2015)	Long	14m	Australia Sch	601	9-13	51% M	Both ref	Qu	C	Qu	C
Rudolph & Zimmer-Gembeck (2014)	C-S	-	Australia Sch	649	9-13	41% M	Both ref	Qu	C	Qu	C
Scanlon & Epkins (2015)	C-S	-	USA Comm	124	10-12	29% M	Mothers inc	Qu	C	Qu	C&P
Schreier & Heinrichs (2010)	C-S	-	Germany Sch	793	9-16	49% M	Both inc	Qu	C	Qu	C&P
Su et al (2016)	C-S	-	USA Sch & Comm	80	11.9 (*M*)	79% M	Both inc	Qu	C	Obs Qu	I P

Study	Design	Follow up timepoints	Country of recruitment and study population	Sample size (children)	Participant age range (baseline SA measure)	Participant gender	Parents inc / ref	SA measure	Informant	Parenting measure	Informant
Vreeke et al (2013)	Long	12m	Netherlands Comm	168	3-6	54% M	Not stated	Qu	P	Qu	P
Wei & Kendall (2014)	C-S	-	USA Clin	175	7-14	53% M	Both ref	Qu	C	Qu	C

C-S=Cross-sectional, Long=Longitudinal, Clin=Clinical sample, Comm=Community sample, Pop=Population survey sample, Sch=School sample, Inc=Included, Ref=Rated by offspring, C=Child, P=Parent, I=Independent, Qu=Questionnaire, Int=Interview, Obs=Observation

Results

Overview

37 studies were included in the review, reporting on a total of 14,933 child and adolescent participants across 34 cohorts. The majority of studies used a cross-sectional design, with eleven articles reporting on prospective longitudinal studies, although four of these drew on the same study cohort (reporting on outcomes from the Early Developmental Stages of Psychopathology (EDSP) Study, a large prospective longitudinal study of German adolescents). Of the 37 studies, ten (comprising seven study cohorts) examined associations between parenting and diagnosed SAD, and 29 examined associations with SAS reported by children or parents. With regard to parenting, the majority of studies included outcomes falling under the broad dimensions of control and rejection (25 and 23 studies respectively), and 12 looked at anxious rearing. Four studies examined aspects of parenting which were not considered to fall under these categories: two of these looked at the more traditional dimensions of authoritarian and authoritative parenting, one looked at parenting specifically in the context of educational and learning practices, and one looked at negative parental response to negative child emotions.

The included studies dated from 1972-2016. Participants in the studies were drawn from a wide range of countries, namely Australia, Germany, Greece, Malaysia, the Netherlands, Nigeria, Portugal, Saudi Arabia, the UK, and the USA. Participants in the included studies ranged in age from 3-20 years at baseline measurement (the latter included as part of their school year as per the inclusion criteria). Most samples included a roughly equal number of males and females, with the exception of three studies which included exclusively boys or girls (Biller & Zung, 1972; Ghazwani et al., 2016; Hutcherson & Epkins, 2009). Nearly all studies used school or population samples, with just two recruiting from clinical populations (Bögels et al., 2001; Wei & Kendall, 2014), although these only included a measure of SAS rather than SAD. A range of measurement methods were used to assess SA: ten studies included diagnostic interviews to establish SAD, three included SAS measures rated by parents, and 27 included SAS measures self-rated by children. The vast majority of studies included only one informant on child and adolescent SA, with just two studies including measures rated by different informants (Festa & Ginsburg, 2011; Lewis-Morrarty et al., 2012). A range of methods were also used to assess parenting: ten studies included an independently-rated measure of a coded parent-child interaction, eight included a parent self-report measure, and the majority of studies (29) included a child-rated questionnaire measure. Ten studies included parenting measures rated by two informants, with the remainder of studies using a single informant.

Table 1.2. Results of the included studies

Study	Parental control	Parental rejection	Anxious rearing	Other parenting factors	Quality rating
Akinsola & Udoka (2013)	-	-	-	Authoritarianism: NS Authoritativeness: ***r*=0.11**** Permissiveness: NS	13
Biller & Zung (1972)	M Control: ***r* = 0.44****	-	-	-	11
Bogels et al (2001)	M Overprotection: **β=0.17*** F Overprotection: NS Overprotection: *r*= -0.30 (G)(P) *r*=0.21 (G)(C)	M Rejection: NS F Rejection: NS Rejection: *r*= -0.14 (G)(P) ***r*=0.38*** (G)(C) M Warmth: NS F Warmth: NS Warmth: *r*= -0.36 (G)(P) ***r*= -0.42**** (G)(C)	M Encouragement: NS F Encouragement: NS Encouragement: *r*= -0.27 (G)(P) *r*= -0.25 (G)(C) M Other's opinion: NS F Other's opinion: NS Other's opinion: ***r*= -0.39*** (G)(P) *r* = -0.04 (G)(C)	-	14
Bogels et al (2011)	-	-	Modelling: ***r*=0.29*****	-	15
Caster et al (1999)	-	-	M Isolation: ***r*=0.20*** F Isolation: ***r*=0.18*** M Other's opinion: ***r*=0.19*** F Other's opinion: ***r*=0.18*** M Shame: ***r*=0.18*** F Shame: ***r*= 0.17*** M Sociability: ***r*= -0.20*** F Sociability: ***r*= -0.19***	-	16
Cunha et al (2008)	M Overprotection: NS F Overprotection: NS	M Emotional support: NS F Emotional support: NS Rejection: ***r*=0.21*** F Rejection: NS	-	-	15

Study	Parental control	Parental rejection	Anxious rearing	Other parenting factors	Quality rating
Festa & Ginsburg (2011)	Overcontrol: *r*=0.08 (I-SA) *r*=0.07 (C-SA) Overprotection: *r*= -0.02 (I-SA) ***r*=0.32*** (C-SA)	Rejection: ***r*=0.31*** (I-SA) *r*=0.21 (C-SA)	-	-	15
Fisak & Mann (2010)	-	-	Modelling: ***r*=0.29***** Shame: ***r*=0.23***** Sociability: *r*=0.05	-	15
Ghazwani et al (2016)	Overprotection: *r*=0.20	Criticism: *r*=0.40 Criticism in front of others: *r*=0.25 Anger: *r*=0.38 Provocation: *r*=0.52	-	-	11
Gray et al (2011)	Control: ***r*=0.13***	Acceptance: ***r*= -0.16****	-	-	15
Greco & Morris (2002)	F Command: *r*=0.13 F Overprotection: NS F Physical control: ***r*=0.52****	F Critical statements: *r*= -0.03 F Ignore: *r*= -0.06 F Positive statements: *r*=0.20 F Warmth: NS	-	-	15
Gruner et al (1999)	M Control: ***r*=0.27**** F Control: ***r*=0.26****	M Rejection**: *r*=0.31**** F Rejection**: *r*=0.32***** M Warmth: *r*= -0.08 F Warmth: *r*= -0.07	M Anxious rearing: ***r*=0.29**** F Anxious rearing: ***r*=0.20***	-	15
Gulley et al (2014)	-	M Criticism: ***r*=0.39**** M Emotional support: *r*=0.03 M Negative affect: ***r*=0.35***	-	M Authoritarianism: ***r*=0.46**** M Authoritativeness: *r*= -0.16	14
Huang et al (2012)	-	Criticism: β=0.08	-	Negative emotion socialisation: β=1.03	17
Hummel & Gross (2001)	Explanation: ***r*= -0.26**** Suggestion: ***r*= -0.24*** Verbal control: NS	Negative feedback: ***r*=0.33***** Positive feedback: ***r*= -0.33*****	-	-	15
Hutcherson & Epkins (2009)	-	M Acceptance: *r*=0.07 (M) *r*= -0.15 (C)	M Social support: ***r*= -0.30*****	-	16

Study	Parental control	Parental rejection	Anxious rearing	Other parenting factors	Quality rating
Johnson et al (2005)	-	-	M Other's opinion: ***r*=0.24**** ***r*=0.22**** (G) F Other's opinion**:** ***r*=0.19**** ***r*=0.18**** (G) M Shame: ***r*=0.17**** ***r*=0.14**** (G) F Shame**:** ***r*=0.18**** ***r*=0.13**** (G) M Sociability: ***r*= -0.16**** ***r*= -0.11**** (G) F Sociability: ***r*= -0.15**** ***r*= -0.11**** (G)	-	16
Knappe et al (2009a)	Overprotection: β=0.09	Rejection: β=0.05 Warmth: β= -0.11	-	-	18
Knappe et al (2009b)	Overprotection**:** ***r*=0.05***** (Threshold SA) ***r*=0.02*** (Subthreshold SA) *r*=0.01 (Symptomatic SA)	Rejection**:** ***r*=0.08***** (Threshold SA) ***r*=0.03*** (Subthreshold SA) *r*=0.02 (Symptomatic SA) Warmth: ***r*= -0.03**** (Threshold SA) *r*= -0.01 (Subthreshold SA) *r*=0.00 (Symptomatic SA)	-	-	17
Knappe et al (2009c)	Overprotection**: *r*=0.11*****	Rejection: ***r*=0.11**** Warmth: ***r*= -0.10****	-	-	17
Lewis-Morrarty et al (2012)	M Overcontrol: *r*=0.2 (C-SA) ***r*=0.29*** (M-SA) **β=0.36**** (I-SA)	-	-	-	16

Study	Parental control	Parental rejection	Anxious rearing	Other parenting factors	Quality rating
Lieb et al (2000)	Overprotection: ***r*=0.09****	Rejection: ***r*=0.09**** Warmth: *r*= -0.10	-	-	18
Loukas (2009)	M Control: T1: ***r*=0.13*** (girls), *r*=0.11 (boys) T2: *r*=0.02 (girls), *r*=0.10 (boys)	-	-	-	17
Mellon & Moutavelis (2011)	-	-	-	Negative reinforcement**: *r*=0.25**** Non-responsiveness: ***r*=0.17**** Positive reinforcement: *r*= -0.06	16
Morris & Oosterhoff (2016)	M Command: *r*= -0.15 F Command: *r*=0.11 M Physical control: *r*=0.18 F Physical control: *r*=0.07 M Verbal instruction: ***r*=0.30**** F Verbal instruction: *r*=0.02	M Criticism: *r*= -0.11 F Criticism: ***r*=0.22*** M Denied reassurance: *r*=0.07 F Denied reassurance: *r*= -0.04 M Warmth: *r*= -0.18 F Warmth*: r*= -0.10	-		15
Mousavi et al (2016)	Overprotection: ***r*=0.28****	Rejection: ***r*=0.30**** Warmth: ***r*= -0.27****	Anxious rearing: ***r*=0.32****		16
Murray et al (2014)	-	-	M Encouragement: NS M Threat attribution: ***r*=0.40***	-	16
Papini & Roggman (1992)	Adolescent autonomy: T1 ***r*=0.34*** T2 ***r*=0.36*** T3 ***r*=0.48****	-	-	-	14
Rapee (2014)	M Overinvolvement: *r*=0.13	M Criticism: *r*=0.19			15
Rork & Morris (2009)	M Command: ***r*=0.44*** F Command: NS M Criticism: NS F Criticism: NS M Instruction: NS M Instruction: NS M Overprotection: ***r*=0.37*** F Overprotection: NS	M Affirmation: NS F Affirmation: NS M Praise: NS F Praise: NS M Warmth: NS F Warmth: NS	M Social activity: NS F Social activity: NS		13

Study	Parental control	Parental rejection	Anxious rearing	Other parenting factors	Quality rating
Rowe et al (2015)	Coercion**:** T1: ***r*=0.24**** T2: ***r*=0.21**** Control: T1: ***r*=0.30**** T2: ***r*=0.23****	Rejection: T1: ***r*=0.27**** T2: ***r*=0.20****	-		16
Rudolph & Zimmer-Gembeck (2014)	Control: ***r*=0.31***	Rejection: ***r*=0.29*** Warmth: ***r*= -0.13***	-		16
Scanlon & Epkins (2015)	M Control: *r*=0.14 (C) *r*= -0.01 (M)	M Rejection**:** ***r*=0.27***** (C) *r*=0.10 (M)	-	-	17
Schreier & Heinrichs (2010)	-	-	M Fear of negative child evaluation: ***r*=0.24**** (P) ***r*=0.41**** (C) F Fear of negative child evaluation: ***r*=0.11*** (P) ***r*=0.40**** (C) M Social encouragement: ***r*=0.16*** (C) *r*=0.07 (M) F Social encouragement: ***r*=0.17**** (C) *r*= -0.02 (F)		17
Su et al (2016)	-	-	P Positive cognitive framing: *r*= -0.04 (Global SA) ***r*= -0.27** (State SA) P Facilitation of socialisation**:** ***r*= -0.27* (**Global SA) *r*= 0.11 (State SA) P Prosocial advice: *r*= -0.09 (Global SA) ***r*= -0.24** (State SA)		16
Vreeke et al (2013)	Overprotection: β= -0.06	-	-	-	16

Study	Parental control	Parental rejection	Anxious rearing	Other parenting factors	Quality rating
Wei & Kendall (2014)	M Firm control: *r*=0.01 F Firm control: *r*=0.03 M Psychological control: ***r*=0.22**** F Psychological control*: r*=0.11	M Acceptance: *r*= -0.14 F Acceptance: *r*= -0.14	-		16

M = Mother, F = Father, C = Child-rated parenting, P=Parent-rated parenting, I = Independently-rated parenting, C-SA=Child-rated SA, P-SA=Parent-rated SA, I-SA=Independently-rated SA, G=Group comparison, T=Time

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$

NS = Non-significant effect

The results of the included studies are discussed below according to the categories of parental control, rejection and anxious rearing. Within each category, studies are discussed according to whether they: i) used a cross-sectional or longitudinal design; ii) examined SAD or SAS; and iii) whether parenting was measured by independent observation, parent or child report. Some studies are therefore referenced multiple times across or within categories, according to these characteristics. Furthermore, within each section, effort was made to group studies, where possible, according to: i) whether both parents were included, and if so, whether a measure of combined or separate parenting was used; and ii) the age of the included children.

Table 1.3. Subdimensions of parenting categories

		Parenting dimension		
		Control-Autonomy-granting	*Rejection - Warmth*	*Anxious rearing*
Assessment method	*Child- / parent-rated*	Autonomy-promotion Coercion (Over)control Overprotection	Acceptance Anger Conflict Criticism Emotional/social support Provocation Rejection Warmth	Anxious rearing Concern with others' opinions Expression of shame Facilitation of socialisation Fear of negative child evaluation Isolation / isolation of child Modelling of anxious response Sociability Social encouragement
	Observed	Command Explanation Instruction Overcontrol Overinvolvement Physical control Suggestion Verbal control	Criticism Denied reassurance Emotional support Negative affect Positive/negative feedback Rejection	Prosocial advice Social cognitive framing Social encouragement Social threat attribution

Cross-sectional associations between child and adolescent social anxiety and parental control

Associations with social anxiety disorder

Two studies examined cross-sectional associations between diagnosed child and adolescent SAD and parental control. One of these used an independently-rated measure of parental overcontrol assessed by a five-minute parent-child speech task, alongside a child-report measure, and the other used a child-report measure of parental control.

Festa and Ginsburg (2011) did not find significant associations between SAD in children (aged 7-12) and independently-rated parental overcontrol or child-rated parental overprotection. Cunha et al (2008) compared ratings of parental overprotection between adolescents diagnosed with SAD, adolescents diagnosed with non-SAD anxiety disorders, and a non-anxious control group. However, no significant differences were found between any of the groups on either maternal or paternal overprotection.

Associations with social anxiety symptoms

15 studies reported outcomes on cross-sectional associations between self-reported child SAS and dimensions of parental control. Of these, five included an independent rating of parental control assessed through a coded parent-child interaction task, two studies included parental self-report ratings of control, and all but two of the 15 studies included a measure of child-perceived parental control. These are discussed in turn below.

All five of the studies using an independent measure of parenting had a fairly small sample size and involved samples of children of similar ages (7-13 years). Festa & Ginsburg (2011) found no significant association between child SAS and independently-rated parental overcontrol. Hummel and Gross (2001) found no significant difference in independently-rated verbal control between parents of high socially-anxious (high-SA) and low socially-anxious (low-SA) children, but did find that parents of high-SA children used significantly fewer explanations and suggestions in interactions than parents of low-SA children, indicating lower levels of autonomy-granting. Both Morris and Oosterhoff (2016) and Rork and Morris (2009) examined associations between child SAS and a number of maternal and paternal behaviours coded as controlling. However, the former study found that only maternal verbal instruction during an interaction task was significantly related to SAS in offspring, and the latter study only found a significant association for maternal commands. Finally, in a study of paternal parenting, Greco & Morris (2002) compared observed paternal control between fathers of high-SA and low-SA children, and found that fathers of high-SA children used significantly more physical, but not verbal, control compared to fathers of low-SA children, after controlling for general anxiety and depression.

Neither of the two studies which used parent self-report measures of control found significant associations with child SAS. In a mixed clinical and non-clinical sample, Bogels et al (2001) did not find significant associations between child SAS and either self-reported maternal or paternal overprotection. Furthermore, no significant differences were found in combined parent-rated parental control between parents of high-SA, low-SA clinical control, and non-clinical control

children (unselected for SA). Similarly, Scanlon and Epkins (2015) did not find a significant association between child SAS and mother-rated maternal control.

Of the 13 studies which examined associations between child SAS and child-rated measures of perceived parental control, five used a combined rating for both parents. Rudolph and Zimmer-Gembeck (2014), Gray et al (2011) and Festa and Ginsburg (2011) all used samples of children of similar ages (7-13 years). The former two studies found significant correlations between child SAS and parental control, with small and medium effect sizes respectively, and the latter study found a significant medium-sized association between child SAS and parental overprotection. Mousavi et al (2016) and Ghazwani et al (2016) both examined associations between parental overprotection and SAS in adolescent samples recruited in Malaysia and Saudi Arabia, respectively. Mousavi et al (2016) reported a small but significant association between SAS and overprotection, but although Ghazwani et al (2016) found a relationship between SAS in male adolescents and parental overprotection, they did not report whether this association was statistically significant. A further four studies examined associations between child SAS and child-perceived parental control separately for mothers and fathers. Again, three of these used samples of children of similar age ranges (7-14 years) (Grüner et al., 1999; Rork & Morris, 2009; Wei & Kendall, 2014), with the fourth paper including children spanning a wider age range (8-18 years) drawn from both clinical and non-clinical populations (Bögels et al., 2001). Gruner et al (1999) found significant, small associations between child SAS and both maternal and paternal control. Wei and Kendall (2014) examined associations between SAS in a clinical sample of children, and parental overprotection and firm control (indicating strict discipline and punishment). They found a significant, small correlation between child SAS and maternal overprotection, but not paternal overprotection, and no significant associations with maternal or paternal firm control. Rork and Morris (2009) similarly found a significant, medium-sized association with maternal, but not paternal, overprotection, although when analysed separately by child gender, found that this association applied only to SAS in boys. Bogels et al (2001) also found that child-perceived maternal, but not paternal, overprotection was a significant predictor of child SAS in a regression model which also included other parenting factors. However, they did not find any significant differences in child-rated parental overprotection in group comparisons between parents of high-SA, low-SA clinical control and non-clinical control children. Finally, two studies looked only at maternal control (Biller & Zung, 1972; Scanlon & Epkins, 2015) and one study looked only at paternal control (Greco & Morris, 2002). Whilst Scanlon and Epkins (2015) found no significant association between child SAS and maternal control, in a small, dated study in which daughters rated their mothers' parenting, Biller and Zung (1972) found a significant medium-sized correlation between child SAS and maternal

overprotection. Greco and Morris (2002) also had a small sample size, and found no significant difference in ratings of paternal overprotection between groups of high-SA and low-SA children.

Longitudinal associations between child and adolescent social anxiety and parental control

Associations with social anxiety disorder

Six studies reported on longitudinal relationships between parental control and diagnosed offspring SAD, although four of these studies drew on data from the EDSP Study (described above). Two studies used independently-coded measures of observed parental control, and the EDSP studies used measures of parental control rated by offspring.

Both of the studies which used measures of observed parenting measured maternal control when children were young, and later assessed SAD in adolescents in order to examine longitudinal associations. Rapee (2014) examined the association between maternal overinvolvement, measured when children were aged four using coded five-minute speech samples, and SAD at 15 years. However, no significant association was found. Lewis-Morrarty et al (2012) found that maternal overcontrol, assessed when children were aged seven using parent-child interaction tasks, significantly predicted lifetime SAD diagnoses in adolescents. However, although their model accounted for child behavioural inhibition, earlier child SAD was not assessed and was therefore not controlled for.

Four studies reported outcomes of the large-scale EDSP Study conducted over a ten-year period. Lieb et al (2000) and Knappe et al (2009c) examined associations between adolescent ratings of perceived parenting and the risk of SAD onset in adolescents. Reporting on cumulative results from the first follow up at 20 months, and all three follow up timepoints, respectively, they found that higher rates of parental overprotection were significantly associated with higher rates of offspring SAD (controlling for baseline rates), although the associations were small. In their paper examining associations between parenting variables and symptomatic and subthreshold, as well as threshold, SAD in offspring, Knappe et al (2009b) found very small, but nevertheless significant, associations between higher parental overprotection and higher rates of both threshold and subthreshold (but not symptomatic only) SAD in offspring. Finally, in an EDSP paper examining the persistence of offspring SAD, Knappe et al (2009a) did not find a significant association between levels of parental overprotection and levels of persistence of offspring SAD.

Associations with social anxiety symptoms

Five studies reported outcomes on longitudinal associations between child SAS and parental control. One of these studies used an observed measure of parental control, one used a parental report of control, and the remaining three used child-report measures of parenting.

Lewis-Morrarty et al (2012) examined associations between maternal overcontrol assessed when children were aged seven, and SAS in adolescents as reported by both adolescents and mothers. They found that observed maternal overcontrol at seven years was significantly associated with adolescent SAS as rated by mothers, but not adolescents. In subsequent analyses, maternal control significantly predicted adolescent SAS symptoms in a model which accounted for earlier behavioural inhibition (but not SAS).

In a study of young children (aged 3-6 years at baseline) over a one-year time period, which used parental reports of both parenting and child SAS, Vreeke et al (2013) did not find either concurrent or prospective associations between parental overprotection and child SAS.

The three studies examining associations between self-reported child SAS and child reports of perceived parental control were all conducted in school children of similar ages (9-14 years). In a substantial study, Rowe et al (2015) found that parental control and coercion, as rated by children at baseline, were significantly correlated with offspring SAS both concurrently at baseline and at follow up over a year later. Furthermore, a structural model showed that, although there was no direct effect of parental control, adolescents who reported higher parental coercion reported an increase in SAS symptoms at follow up relative to baseline SAS levels. Papini and Roggman (1992) conducted a small study looking at associations between SAS and emotional autonomy in adolescents, measured at three timepoints over approximately 15 months. Contrary to expectations, they found significant and increasingly substantial concurrent associations between these variables over the three measurement points, indicating that higher emotional autonomy in adolescents was linked to *higher* levels of SAS. However, these changes were not found to be significant, and only concurrent (rather than prospective longitudinal) associations were examined in this study. Finally, in another substantial study conducted over one year, which looked only at maternal parenting, Loukas (2009) found a significant, small correlation between maternal control and offspring SAS at baseline, but this association was only significant for girls. However, at follow up one year later, no significant associations were found between maternal control at either time point and SAS in offspring of either gender. As expected based on these correlations, perceived maternal control did not significantly predict adolescent SAS in a structural model.

Cross-sectional associations between child and adolescent social anxiety and parental rejection

Associations with social anxiety disorder

Three studies examined cross-sectional associations between diagnosed child SAD and parental rejection. One of these used an independently-rated measure of observed parental rejection during a five-minute parent-child interaction task, and the remaining two both used a child-report measure of parental rejection.

In the study using a measure of observed parenting, Gulley et al (2014) found significant, medium-sized associations between child SAD and both maternal criticism and negative affect, although found no significant association with maternal emotional support.

Of the two studies using measures of child-perceived parenting, one looked at associations in younger children (aged 7-12) (Festa & Ginsburg, 2011) and the other looked at associations with adolescent SAD (Cunha et al., 2008). Festa and Ginsburg (2011) found a significant, medium-sized association between child SAD and perceived parental rejection, which remained a significant predictor of child SAD in a regression model which also accounted for parental control. Cunha et al (2008) compared children diagnosed with SAD, non-SAD anxiety and non-anxious control children on measures of perceived maternal and paternal rejection and emotional support. They found that children with SAD rated their mothers as significantly higher in rejection compared to non-anxious (but not anxious control) children, but found no between-group differences in paternal rejection, and consistent with the results of Gulley et al (2014), also found no differences between groups in maternal or paternal emotional support.

Associations with social anxiety symptoms

15 studies reported on cross-sectional associations between child SAS and dimensions of parental rejection. All of these studies used child self-report measures of SAS, with the exception of one which used a parent-report measure. Four studies used independently-rated measures of rejection during parent-child interaction tasks, four included parental self-report measures of rejection, and all but two of the 15 studies included child reports of perceived parental rejection.

As above, all four of the studies using measures of observed parental rejection involved children of similar ages (9-13 years) and fairly small sample sizes. Hummel and Gross (2001) examined independently-rated measures of parental positive and negative feedback during a parent-child interaction task (coding for levels of warmth and criticism, respectively), and found that parents of high-SA children used significantly less positive, and significantly more negative, feedback

than parents of low-SA children. In the largest of the four studies, Morris and Oosterhoff (2016) examined associations between child SAS and maternal and paternal warmth, criticism and instances of denied reassurance during an interaction task. However, they did not find any significant associations with observed maternal parenting variables, and of the paternal variables, found a significant, small association only between child SAS and paternal criticism. Consistent with these results, Rork and Morris (2009) did not find significant associations between child SAS and maternal or paternal behaviours coded for warmth during an interaction task, and in their study of child SAS and fathers' parenting, Greco and Morris (2002) similarly found no significant difference in observed rejecting behaviours between fathers of high-SA and low-SA children.

The four studies using parental self-reports of parenting were heterogenous in terms of child age (ranging from 3-18 years). In a study of young children (3-5 years), Huang et al (2012) found no significant association between parental criticism and parent-reported child SAS. Similarly, Bogels et al (2001), who included a mixed sample of children aged 8-18 years drawn from both clinical and non-clinical populations, found that neither self-rated maternal or paternal rejection nor warmth was significantly predictive of child SAS. Furthermore, there was no significant difference in parents' ratings of rejection or warmth between parents of high-SA, low-SA clinical control, and non-clinical control children. The remaining two studies both included community samples of children of similar ages (9-12 years) and focussed just on maternal parenting (Hutcherson & Epkins, 2009; Scanlon & Epkins, 2015). Again, however, neither study found a significant association between child SAS and maternal self-reports of acceptance or rejection.

Of the 13 studies which investigated associations between SAS and child-perceived parental rejection, five used a measure of parental rejection combined for mothers and fathers. Festa and Ginsburg (2011), Gray et al (2011) and Rudolph and Zimmer-Gembeck (2014) all included children of similar ages (7-13 years). In the smallest of these studies, Festa and Ginsburg (2011) did not find a significant association between child SAS and perceived parental rejection. However, Gray et al (2011) found a significant, small negative association between child SAS and perceived parental acceptance, and in a large study, Rudolph and Zimmer-Gembeck (2014) found small significant correlations between child SAS and both parental rejection and warmth. The other two studies using a measure of combined parental rejection were both conducted in adolescents. Mousavi et al (2016) found significant associations between SAS in Malaysian adolescents and both parental rejection and warmth (with a medium and small effect size, respectively), but although Ghazwani et al (2016) found associations between SAS in male Saudi Arabian adolescents and parental criticism, criticism in front of others, anger and provocation, (with effect sizes ranging from small to large), as earlier, they did not state whether these

associations were statistically significant. A further five studies examined associations between child SAS and child-rated maternal and paternal rejection separately. Gruner et al (1999), Morris and Oosterhoff (2016) and Rork and Morris (2009) all examined associations between SAS in children of similar ages (9-13 years) and perceived maternal and paternal warmth, and all found non-significant associations, although Gruner et al did find significant medium-sized associations with both maternal and paternal rejection. Similarly, Wei and Kendall (2014) did not find significant associations between SAS in a clinical sample of children and either maternal or paternal acceptance. Lastly, although Bogels et al (2001) likewise found that neither perceived maternal nor paternal rejection or warmth was significantly associated with SAS in children, in group comparisons they did find that high-SA children rated their parents as significantly more rejecting, and less warm, than non-clinical (but not clinical) control children. Finally, three studies examined perceived rejection in one parent only (Greco & Morris, 2002; Hutcherson & Epkins, 2009; Scanlon & Epkins, 2015), all of which included children of a similar age range (9-12 years). In the two studies looking at maternal parenting, Scanlon and Epkins (2015) found a small significant association between child SAS and maternal rejection, although this association was no longer significant after controlling for child depression symptoms; and Hutcherson and Epkins (2009) found no significant association between girls' SAS and perceived maternal acceptance. Finally, in a small study on fathers' parenting, Greco and Morris (2002) found no significant difference in perceived paternal warmth between high-SA and low-SA children.

Longitudinal associations between child and adolescent social anxiety and parental rejection

Associations with social anxiety disorder

Five studies reported on longitudinal associations between dimensions of parental rejection and offspring SAD. One of these used a coded five-minute speech sample to assess parenting. The remaining four studies were drawn from the EDSP Study, and used adolescent ratings of perceived parenting.

Rapee (2014) examined associations between maternal critical attitudes, measured when children were aged four by coded speech samples, and SAD assessed in adolescents aged 15 (study as described above); however, no significant association was found.

In the two EDSP studies reporting associations between dimensions of parental rejection and the risk of SAD onset in offspring over a period of 20 months (first follow up) and ten years (all three follow ups), respectively, Lieb et al (2000) and Knappe et al (2009c) found a small but significant association between increased cumulative levels of SAD in offspring and higher parental rejection (accounting for baseline levels). They also found a small association between

offspring SAD and lower parental warmth, although this relationship was only significant when data from all follow up timepoints were included. When additionally taking into account subthreshold and symptomatic levels of offspring SAD alongside cases meeting diagnostic threshold, Knappe et al (2009b) found significant but very small associations between higher parental rejection and at least subthreshold levels of offspring SAD. However, the relationship between lower parental warmth and offspring SAD was significant only for threshold levels of SAD. In the final EDSP paper, which focused on the persistence of SAD in offspring, Knappe et al (2009a) did not find a significant association between either parental rejection or warmth and persistence of threshold levels of SAD in offspring. However, when additionally taking into account levels of SAD below the diagnostic threshold, they found a significant association between parental warmth and at least subthreshold levels of SAD.

Associations with social anxiety symptoms

Only one study examined longitudinal associations between parental rejection and child SAS (Rowe et al., 2015). This was a substantial study conducted in school children (aged 9-13 at baseline) over 14 months, and used child-report measures of SAS and perceived parental rejection. They found that parental rejection, as rated by children at baseline, was significantly correlated with SAS measured both concurrently at baseline and at follow up over one year later, with a small to medium effect size. However, in a structural equation model which included additional variables (including parental control and coercion, as discussed above, as well as child depression and rejection sensitivity) there was no direct effect of parental rejection on adolescent SAS at follow up assessment compared to baseline SAS.

Cross-sectional associations between child and adolescent social anxiety and anxious rearing

Associations with social anxiety symptoms

11 studies reported on cross-sectional associations between child SAS and parenting styles or behaviours falling under the broad dimension of anxious rearing, although studies were heterogenous with regard to the range of parenting factors they explored (see Table 1.3). Only one of these studies included an independently-assessed measure of observed parenting, four included parental self-report measures, and eight included child-report measures of perceived parenting. One study additionally assessed parental sociability by means of an activity log, and one study used a different paradigm to assess parental modelling (described below).

Su et al (2016) examined associations between self-reported adolescent SAS and parenting relating specifically to adolescents' peer relationships. Adolescents participated in a laboratory

conversation task designed to simulate peer evaluation, followed by a parent-child discussion about managing the peer evaluation. These discussions were independently coded for parental modelling of positive cognitive framing (high benign and low threatening interpretations) and prosocial behavioural advice. SAS were measured both globally (by self-report questionnaire) and through a context-specific state measure during the assessment. Results showed that parental positive cognitive framing and prosocial advice were significantly and independently negatively associated with context-specific SA, but not with global SAS.

Su et al (2016) additionally included a parental self-report measure of facilitation of adolescent socialisation, which was found to be significantly negatively correlated with global SAS, but which was not associated with state SA during the task. Three further studies included parental self-report measures of anxious rearing variables. In a large study, Schreier and Heinrichs (2010) found significant small associations between child SAS and self-reported maternal and paternal fear of negative child evaluation. However, they did not find significant associations between child SAS and self-reported maternal or paternal social encouragement of the child. Bogels et al (2001) also examined associations between child SAS and self-reported parental social encouragement of the child, and additionally looked at parental concern with the opinion of others, but found that neither of these factors was associated with child SAS for mothers or fathers. However, in group comparisons between high-SA, clinical and non-clinical control children, whilst no between-group differences were found in combined parental social encouragement, a significant difference was found between parents of high-SA and non-clinical (but not clinical) control children on parental ratings of their concern with others' opinions, but in the direction opposite to that expected (e.g. parents of high-SA children reported *less* concern than parents of control children). In another large-scale study, Caster et al (1999) examined associations between adolescent SAS and four aspects of anxious rearing: concern with others' opinions, shame about child performance, isolation of the child, and parental sociability. They compared parenting of high-SA and low-SA children, but found no significant differences between these groups on maternal or paternal self-reports. Rork and Morris (2009) also examined parental sociability, assessed through parental daily activity logs over ten days, but similarly found no significant associations between maternal or paternal social activity and child SAS.

Eight studies included child reports of perceived anxious rearing. Fisak and Mann (2010) and Mousavi et al (2016) both used measures of combined parenting by mothers and fathers in adolescent samples (13-18 years). Fisak and Mann (2010) examined the subdimensions of parental sociability, shame, and modelling of socially-anxious responses, and compared perceived parenting between high-SA and low-SA adolescents. They found that high-SA

adolescents reported significantly greater parental shame and parental modelling of SA-related responses than low-SA adolescents, with small effect sizes, but found no significant between-group differences in parental sociability. Mousavi et al (2016) used a general measure of anxious rearing, and found a significant, medium-sized correlation with adolescent SAS. Gruner et al (1999) also used a general measure of anxious rearing in younger children (9-12 years), and here children rated their mothers and fathers separately; small but significant correlations were similarly found between child SAS and both maternal and paternal anxious rearing. In a large study, Schreier and Heinrichs (2010) investigated associations between child SAS and perceived maternal and paternal fear of negative evaluation of the child and social encouragement of the child. Consistent with parent reports (described above), analyses of child reports revealed medium-sized significant associations between child SAS and perceived maternal and paternal fear of negative child evaluation, as well as small significant correlations with both maternal and paternal social encouragement of the child (although these latter associations were in the opposite direction to that hypothesised; namely that more encouragement of the child in social situations and positivity regarding the child's social interactions predicted *higher* child SAS scores). As above, Bogels et al (2001) similarly investigated whether child SAS was associated with perceived parental social encouragement of the child, and additionally looked at perceived parental concern with others' opinions, but found no significant associations for child ratings of mothers or fathers, and no significant differences in ratings between high-SA, clinical and non-clinical children. On the contrary, in a large-scale study, Johnson et al (2005) found significant, small associations between child SAS and maternal and paternal concern with others' opinions, expression of shame, and sociability. Furthermore, in group comparisons between children high in SAS, high in depression symptoms, high in mixed SA/depression symptoms, and a control group, those in the high-SA group rated both their mothers and fathers as significantly lower in sociability, and higher in shame and concern with others' opinions, compared to the control group (again with small effect sizes). However, ratings were significantly more extreme in both the depressed and mixed SA/depressed groups. In another large-scale study examining the same parenting variables, plus parental isolation of the child, Caster et al (1999) also found that, compared to low-SA children, high-SA children rated both their mothers and their fathers as being less sociable, expressing more shame, having greater concern with others' opinions and being more isolating (with small effect sizes). In the final study using child reports of perceived parenting, Hutcherson and Epkins (2009) found a medium-sized significant negative association between girls' SAS and perceived maternal social support.

Lastly, in a study using a different method of assessing parental modelling of SA-related responses, Bogels et al (2011) conducted a study examining children's responses to parental

behaviour in ambiguous social scenario vignettes, whereby the child imagined their parent reacting either in a socially-anxious or a socially confident manner. They found that children responded with significantly higher SAS ratings when imagining their parent displaying socially-anxious (versus confident) responses to ambiguous scenarios, with a small effect size; this effect was significant for mothers and fathers, but was stronger for maternal modelling of responses. Furthermore, in group comparisons between high-SA and low-SA children, they found that fathers' responses influenced child SAS more in high-SA children, but that mothers' responses influenced child SAS more in low-SA children.

Longitudinal associations between child and adolescent social anxiety and anxious rearing

Associations with social anxiety disorder

Only one study investigated longitudinal associations between anxious rearing and child SA (Murray et al., 2014). This study used independently-rated measures of maternal encouragement of the child and attribution of environmental threat, assessed through coded parental narratives about children starting school. Children were then assessed for SAD approximately four months later (after they had started school). Results showed a significant, medium-sized association between maternal threat attribution and later child SAD, but no significant association with maternal social encouragement. However, although infant behavioural inhibition was accounted for, baseline levels of child SAD were not assessed.

Associations between child and adolescent social anxiety and other parenting styles and behaviours

Four studies included outcomes on parenting which were not considered to fall under the three broad categories discussed above. One of these used diagnostic ratings of SAD and independently-assessed measures of parenting. Of the remaining three studies, one used parental ratings of both child SAS and parenting and two used child-report measures of both SAS and parenting. These are discussed in turn below.

Gulley et al (2014) examined associations between child SAD and maternal parenting assessed through a coded mother-child interaction task. Rather than exploring parenting along the dimensions discussed above, they explored the more traditional categories of authoritative and authoritarian parenting. These categories include aspects of both parental control and rejection, and can therefore be regarded to some extent as 'hybrids' of the parenting dimensions discussed above. This study found a medium-sized significant association between child SAD and maternal authoritarian behaviours, but no significant association with authoritative

parenting. Akinsola and Udoka (2013) also investigated the traditional categories of parental authoritarianism, authoritativeness and permissiveness in a substantial study in Nigerian adolescents. Consistent with the results of Gulley et al (2014), they found a small significant association between high levels of adolescent SAS and authoritarian, but not permissive or authoritative, parenting.

Huang et al (2012) conducted a study in young children (aged 3-5 years), looking at the association between parent-rated child SAS and parental reports of negative emotion socialisation, a measure which captured parents' use of negative strategies (such as punishment or neglect) in response to negative emotions in their child. However, no significant association was found between these variables. Finally, Mellon and Moutavelis (2011) carried out a large study exploring associations between child SAS and parenting relating specifically to interactions in the context of learning and educational practices, with a particular focus on reinforcement contingencies. They found significant correlations between self-reported child SAS and perceived parental negative reinforcement and non-responsiveness, both with small effect sizes, but no significant association with positive reinforcement.

Quality analysis

Quality analysis revealed that the methodological quality of the studies included in the review varied, with scores ranging from 11-18. However, the majority were judged to be of reasonable quality, with only seven studies scoring below 15 (see Table 1.2). Weaknesses of studies related predominantly to biased procedures or insufficient descriptions of participant selection or socio-demographic characteristics, insufficient sample sizes, a lack of psychometric robustness in outcome measures, and insufficiently detailed reporting of results (see Appendix 1.3 for individual scores). There was large variability amongst the included studies in terms of sample size, with samples ranging from 30 to 3649 at baseline, although many had sample sizes under 200, and potentially represented low statistical power (although power calculations were not reported). This is likely to be the case especially for studies in which children with SA represented only a subset of the overall sample, or which used a subset of the entire sample for extreme group comparisons, and few studies discussed the limitations of their statistical analyses in this respect. Furthermore, a proportion of studies used only a subscale of a broader anxiety measure to assess SA symptoms (often where SA was not the main focus of the paper), which often affected the robustness of the measure.

Discussion

The aims of this review were to examine the nature and strength of associations between child and adolescent SA and parenting. Specifically, the review sought to examine associations between child and adolescent SAD/SAS and dimensions of: i) parental control; ii) parental rejection, and iii) anxious rearing, as well as additional relevant parenting factors not falling under these categories. A total of 37 studies were included in the review, of which 25 included outcomes on parental control, 23 included outcomes on parental rejection, and twelve examined anxious rearing in relation to child SA. Child and adolescent participants ranged in age from 3-20 years at baseline (those over 18 were included as part of their school year, as per the inclusion criteria), and studies were conducted in a range of geographical regions and socioeconomic populations. The results suggested that the existing relevant literature is heterogeneous, and consists predominantly of cross-sectional studies involving samples drawn from school and community populations. The majority of studies used self-report measures of child SAS, with only ten papers (drawn from seven study cohorts) using diagnostic measures of SAD. Similarly, only ten studies included independent measures of observed parental behaviours, with the majority using child reports of perceived parenting style.

Summary of main findings

With regard to associations between child and adolescent SA and parental control, studies examined different aspects of this parenting dimension, but a high proportion used a measure of either overcontrol or overprotection. Overall, 18 of the 25 included studies (72%) found some support for a significant association between child and adolescent SA and dimensions of parental control. Effect sizes (where available) across all studies were generally small to medium, ranging from r= -0.48 to r=0.52 (expressed in terms of an association with higher control and lower autonomy-granting). Findings were generally consistent across cross-sectional and longitudinal studies, and notably, two large-scale and methodologically robust longitudinal studies found significant, albeit small, prospective associations between aspects of parental control and offspring SA (Knappe et al., 2009c; Rowe et al., 2015). With regard to parental rejection, studies similarly examined various subdimensions within this broad category, but most focused on rejection, warmth and acceptance. 15 of the 23 included studies (65%) found some support for a significant association with child and adolescent SA. Again, effect sizes were modest, ranging from r= -0.11 to r=0.52 (expressed in terms of an association with higher rejection and less warmth and acceptance). Findings were again fairly consistent between cross-sectional and longitudinal studies, and the EDSP study found support for a small but significant prospective association between higher parental rejection and lower parental warmth, and

offspring SAD onset, over a period of ten years (Knappe et al., 2009c). These results provide some evidence that parenting characterised by control, overprotection, rejection and a lack of warmth may be associated with increased risk of SA in children. Studies examining associations between child and adolescent SA and aspects of anxious rearing looked at a more diverse range of subdimensions. However, those most commonly investigated were parental sociability, social encouragement/isolation of the child, concern with others' opinions, and expression of shame. Some support was found for an association between each of these parenting subdimensions and child and adolescent SA, but the pattern of results was mixed across studies. However, ten of the 12 studies (83%) investigating aspects of anxious rearing, which included some large-scale studies, found some support for an association with child and adolescent SA. Effect sizes ranged from r= -0.39 to r=0.41, again expressed as an association between higher maladaptive parenting factors and offspring SA. These findings relate predominantly to cross-sectional associations, as only one longitudinal study examining anxious rearing was identified (Murray et al., 2014), which found a significant association with offspring SA. Finally, a few studies looked at other aspects of parenting which were not considered to fall under one of these three categories. These were heterogenous, but two found significant associations between child and adolescent SA and authoritarian parenting (indicating high control and low warmth), and one large study found significant associations between child SA and parental negative reinforcement and non-responsiveness in the context of learning and educational interactions.

Findings in relation to wider literature

The results of the current review are broadly consistent with those of previous reviews examining associations between child and adolescent anxiety and parenting dimensions (Ballash et al., 2006; McLeod et al., 2007; van der Bruggen et al., 2008; Waite et al., 2014; Wood et al., 2003). These reviews have typically found consistent and convincing evidence for an association between dimensions of parental control and offspring anxiety, and more mixed support for associations with dimensions of parental rejection and anxious rearing. The results of the current review provide support for a modest cross-sectional association between parental control and rejection and child and adolescent SA, and some longitudinal support for a contribution of these maladaptive parenting practices, albeit a relatively small one, to an increased risk of SA onset in offspring. Results also suggest that aspects of anxious rearing may be important in child SA, but as in previous reviews, the findings relating to this parenting dimension were mixed, potentially due in part to the heterogeneity of parenting sub-dimensions grouped within this broader category.

Previous meta-analyses have identified methodological and demographic variables which may moderate the relationship between child anxiety and parenting factors, as mentioned earlier (McLeod et al., 2007; van der Bruggen et al., 2008). Although it was beyond the scope of this review to examine these factors in detail, a number of observations can be made. Previous reviews have generally found greater effects in studies using clinical samples and diagnostic measures than in those using school or population samples and self-report measures of anxiety, as well as stronger effects in studies using assessments of observed parental behaviour than in those using questionnaire measures. However, only two studies included in the current review included children recruited from clinical samples, and only ten used diagnostic measures of SAD (range of effect sizes across parenting dimensions: r=0.02 to r=0.46), with the large majority using questionnaire measures of SAS (overall range of effect sizes: r= -0.39 to r=0.52). Similarly, with respect to parenting measures, the majority of the included studies used child-rated measures of perceived parenting, with eight including parental ratings, and only ten relatively small-scale studies using observed and independently-rated measures of parental behaviours. The latter studies often coded multiple parental behaviours, and findings within individual studies tended to be mixed. However, all but one of these studies (90%) found some support for a significant association between maladaptive parental behaviours and child and adolescent SA (overall range of effect sizes: r= -0.15 to r=0.52), compared to 78% studies using questionnaire parenting measures (overall range of effect sizes: r= -0.39 to r=0.52). Amongst questionnaire-based measures of parenting, typically more consistent and substantial support was found for an association with child and adolescent SA when child ratings of perceived parenting were examined, in comparison to parental self-report ratings. Regarding demographic variables, previous reviews have suggested that factors such as child and parent gender, child age, and family socioeconomic status may moderate the relationship between child anxiety and parenting, although findings have been mixed (McLeod et al., 2007; van der Bruggen et al., 2008). However, many of the studies included in the current review included children spanning a wide range of ages, did not conduct gender-specific analyses, and did not account for socioeconomic factors. Furthermore, there was variability across studies as to whether they included one or both parents (either directly, or as rated by children), and whether outcomes were reported separately for mothers and fathers. Fewer studies included fathers, and in those that did, fathers were often under-represented.

Methodological issues of the included papers

Quality analysis revealed that the methodological quality of the studies included in the review varied, but the majority were judged to be of reasonable quality. Small sample size was a common issue, and although studies did not report power calculations, it is possible that many

had low statistical power. There were also common issues with regard to the reliability and validity of outcome measures. For instance, one study which found fairly substantial positive associations between adolescent SAS and emotional autonomy raised a question over the validity of the autonomy measure, implying that it should be interpreted as a measure of emotional distance or detachment between parents and offspring, rather than of more adaptive emotional autonomy and independence (Papini & Roggman, 1992). Furthermore, as discussed above, there was wide variability across studies in the measures used to assess child SA and parenting, and in how these were captured (e.g. different informants). Many of the included studies relied on single-informant reports, which may be subject to bias; either due to shared method variance, or in the case of child-report, to the impact of current anxiety, which research suggests may negatively influence recall, attention and information-processing (Hadwin et al., 2006), and thus negatively bias children's reports of the parenting they receive. The current results should therefore be interpreted with caution, as the most robust study findings tend to be based on reports from multiple sources (Bögels & Melick, 2004). Furthermore, with regard to parenting outcomes, although the few studies using both child- and parent-rated measures generally found that these reports correlated moderately, the studies which included both a child- and independently-rated measure of parenting generally did not find correlations between equivalent ratings, which suggests that these were not accurately measuring the same construct. This is consistent with previous studies, and may be in part due to the fact that observed interactions measure specific parenting *behaviours* within a controlled setting and short timeframe (e.g. a 'state' measure of parenting), whereas questionnaire measures tend to tap into general parenting *style* (e.g. a 'trait' measure) (Bögels & Brechman-Toussaint, 2006). There are pros and cons to each of these methods, and further research is needed to determine how parenting is most effectively assessed.

A number of other methodological and design issues of the included papers are also important to highlight. First, the majority of included studies were cross-sectional; of the 11 included longitudinal studies, four drew on the same participant cohort, and not all were judged to be of high quality. Care must of course be taken when interpreting the results of cross-sectional studies, as the direction of effects cannot be established. Although maladaptive parenting is often considered as a risk factor for offspring SA, it may also be that the direction of effect runs from child to parent, whereby higher levels of child anxiety may elicit increased use of maladaptive parenting styles or behaviours (such as overprotection, or the reinforcement or accommodation of SA-related behaviours, such as avoidance) (Rapee et al., 2009). This may be particularly the case if parents are anxious themselves, whereby their confidence in both their own and their child's coping abilities may be reduced (e.g. Creswell et al., 2006; Lester et al.,

2009; Orchard et al., 2015). Aetiological models of child anxiety highlight the probable reciprocity between multiple child and parental factors (Bögels & Brechman-Toussaint, 2006; Hudson et al., 2004; Rapee & Spence, 2004). The potential direction of these effects is particularly difficult to disentangle given the current paucity of high-quality prospective studies examining longitudinal associations between these factors. Second, as highlighted above, nearly all of the included studies drew solely on community samples. Whilst this may indicate generalisability of results to the wider population, specifically in explaining normal variation in SAS, it may be that a different pattern of results would be found in clinical samples, as suggested by prior research (McLeod et al., 2007; van der Bruggen et al., 2008). Lastly, as discussed earlier, many studies did not consider the role of potential moderating factors in the association between parenting and offspring SA. In addition to the variables mentioned above, there may be other factors which affect the observed associations between these variables. Notably, prior research suggests that both parental psychopathology and co-morbid child psychopathology may moderate the association between child and adolescent SA and parenting (see Knappe et al., 2010). Few of the included studies examined the role of parental psychopathology. However, the results of the EDSP Study suggested that parental psychopathology (including SA, anxiety and depression) and maladaptive parenting were independent predictors of offspring SA, and furthermore that the interaction of these parental factors was associated with greater risk of offspring SA (Knappe et al., 2009c), indicating that this may be an important factor to examine further. With regard to child co-morbidity, many of the included studies measured only SA symptoms, and the extent to which the observed associations may have overlapped with other co-morbid symptoms was therefore unknown. Although a proportion of studies did include measures of non-social anxiety or depression symptoms, few of these presented data on independent associations between parenting and offspring SA accounting for these other symptoms. However, the results of those that did suggested that co-morbid anxiety and depression symptoms may account for at least some of the variance in the association between parenting and offspring SA (e.g. Hutcherson & Epkins, 2009; Johnson et al., 2005; Loukas, 2009). In a similar vein, although many studies investigated associations between child and adolescent SA and two or more parenting dimensions, many of these reported only correlational analyses, and again did not therefore examine the independent contributions of each parenting factor. Thus, the results of the included studies are limited by providing little clarity on the specificity of the observed associations between child and adolescent SA and maladaptive parenting factors. Future research should aim to clarify the specific nature of these relationships by examining and accounting for potential moderating factors. For instance, specificity analyses could be used to disentangle the effect of co-morbid symptoms (e.g. Halls et al., 2015), or an

individual patient data meta-analytic approach could be taken to examine further the impact of identified potential moderators (e.g. Bennett et al., 2013).

Strengths and limitations of the review

There are a number of strengths of the current review. One of the major strengths is the specific focus on child and adolescent SA, rather than a broad range of anxiety or internalising symptoms and disorders as in previous reviews. The strict inclusion criteria ensured that only outcomes relating to a specific and current measure of SAD or SAS were included. A second key strength is that the review included only studies which used a specific measure of current parenting in relation to an index child, excluding retrospective studies and those exploring the impact of more general family functioning and dynamics. Given the substantial number of included studies, these factors enabled an extensive synthesis of research examining parenting factors that may be implicated in child and adolescent SA. However, it may be important for future research also to investigate the impact of more general family factors on the development and maintenance of child SA. An additional strength of the current review lies in the systematic assessment of the methodological quality of included studies, in order to examine the extent to which study design, analyses and reporting minimised potential bias (Kmet et al., 2004).

However, the current review may have been limited by several factors which should be taken into account when interpreting the results. First, although studies were identified by a thorough and systematic literature search, limiting the inclusion criteria to studies written in English, and published in full in a peer-reviewed journal, may have excluded some research of interest. In addition, the latter criterion may mean that the current results are influenced by publication bias, by over-representing studies with statistically significant findings (Conn et al., 2003; McAuley et al., 2000). Second, although categorisation of parenting behaviours and practices into the broad dimensions of control, rejection and anxious rearing is consistent with the existing literature, there is considerable heterogeneity within, as well as overlap between, these categories, and an examination of individual subdimensions may provide a more nuanced account of their potential relation to child SA. Indeed, in their meta-analysis, McLeod et al (2007) found substantial variability between subdimensions of control and rejection in the size of their associations with child anxiety (effect sizes ranged between 0.06 for warmth and 0.42 for autonomy-granting). Moreover, this may be particularly relevant to parenting factors falling under the category of anxious rearing, which is broad in its definition. This construct draws together a number of factors relating to both parental modelling and reinforcement of anxiety-related cognitions and behaviours, and as such the subdimensions of anxious rearing represent relatively discrete aspects of parenting. These factors may therefore be better examined as

individual constructs, rather than grouped under the broad category of anxious rearing; or divided into smaller, perhaps more meaningful, subgroups (e.g. factors relating to parental modelling versus reinforcement of the child). Third, whilst the inclusion of children and adolescents across a broad age range (3-18 years) can be seen as a strength of the current review, there is research suggesting that parenting influence may change across different stages of development (e.g. Connell & Goodman, 2002; Waite et al., 2014). Although the results of the included studies were broadly consistent across pre-adolescent and adolescent samples, examining the potential differential impact of parenting on SA in younger children, pre-adolescents and adolescents may provide further insight into the nature of these relationships. Similarly, research suggests that mothers and fathers may parent children differently, and it is possible that these practices may interact differentially with both child gender and anxiety (Bögels & Brechman-Toussaint, 2006). It may therefore also be important to examine the influence of gender-specific factors in the association between parenting and offspring SA.

Conclusions, implications and future directions

In conclusion, a systematic and comprehensive review was conducted of the literature examining associations between child and adolescent SA and parenting. The review found support for significant but modest associations between child and adolescent SA and dimensions of parental control and rejection. More mixed findings were found relating to dimensions of anxious rearing, but some evidence was found for their association with child SA, and fewer studies examining these factors were available. Methodological shortcomings of the included studies and limitations of the review mean that these results should be interpreted with some caution. Nevertheless, the findings of this review in relation to child and adolescent SA are consistent with previous reviews on child anxiety and parenting, and as such provide further support for theoretical models of the development and maintenance of SA in children and adolescents (e.g. Hudson & Rapee, 2000; Rapee & Spence, 2004).

The implications of these findings are likely to have clinical relevance. Although research has found mixed support for beneficial effects of parental involvement in child anxiety treatment, including SA, there is a trend towards improved outcomes when parents are involved (see Breinholst et al., 2012). Given that the results of the current review support probable associations between parenting factors and offspring SA, there may be some benefit in addressing negative and maladaptive parenting practices as part of a child's treatment plan, with a particular focus on supporting parents to develop more adaptive ways of thinking and responding to their child. However, it is important to highlight once again that the direction of effects between child and parental factors in child SA remains unclear, and it is therefore also

possible that treating SA in children and adolescents may have a positive impact on parenting practices.

Although the results of the current review provide support for a relationship between child and adolescent SA and parenting factors, the precise nature of these associations remains unclear, and it is therefore important that future, methodologically rigorous research systematically examines these factors. Prospective longitudinal designs, involving clinical populations and independently-assessed outcomes, are likely to make a particularly valuable contribution to the current evidence base. In addition, it will be important for future studies and reviews to consider the role and interaction of potential moderating factors, especially parental and co-morbid child psychopathology, when examining associations between parenting and offspring SA. In particular, it will be important for further research to focus on determining parenting factors associated specifically and uniquely with child and adolescent SA, in comparison to other mental health outcomes. This is likely to provide greater clarification on the relevance of specific parental risk factors for SA in children and adolescents, compared to general vulnerabilities for anxiety and psychopathology, which will further inform both theoretical models and clinical practice.

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* Indicates studies included in the review.

Appendices

Appendix 1.1. Full search terms

(exp social anxiety/ OR social* anxi*.mp OR exp social phobia/ OR social* phobi*.mp OR social* fear*.mp OR social* worr*.mp OR exp timidity/ OR exp shyness/ OR shy*.mp OR social* inhibit*.mp OR exp performance anxiety/ OR perform* anxi*.mp)

AND

(exp child/ OR child*.mp OR youth*.mp OR exp adolescence/ OR adolescen*.mp OR teen*.mp)

AND

(exp parents/ OR parent*.mp OR exp mothers/ OR mother*.mp OR exp fathers/ OR father*.mp OR maternal.mp OR paternal.mp OR exp parenting/ OR exp parenting style/ OR parent* style.mp OR exp parental behavior/ OR parent* behavi?r.mp OR exp child rearing/)

Appendix 1.2. Quality analysis checklist

Manual for Quality Scoring (Kmet et al, 2004)

How to calculate the quality score:

*Total Sum = (number of "yes" *2) + (number of "partials" *1)*

*Total possible sum = 18 - (number of "N/A" * 2)*

Total possible score = 18

1. Question or objective sufficiently described?

Yes: Is easily identified in the introductory section (or first paragraph of methods section). Specifies (where applicable, depending on study design) all of the following: purpose, subjects/target population, and the associations under investigation. A study purpose that only becomes apparent after studying other parts of the paper is not considered sufficiently described.

Partial: Vaguely/incompletely reported (e.g., "describe the effect of" or "examine the role of" or "assess opinion on many issues" or "explore the general attitudes" ...); or some information has to be gathered from parts of the paper other than the introduction/background/objective section.

No: Question or objective is not reported, or is incomprehensible.

N/A: Should not be checked for this question.

2. Design evident and appropriate to answer study question?

(If the study question is not given, infer from the conclusions).

Yes: Design is easily/readily identified and is appropriate to address the study question/objective.

Partial: Design and/or study question not clearly identified, but gross inappropriateness is not evident; or design is easily identified but only partially addresses the study question.

No: Design used does not answer study question (e.g., a comparison group is required to answer the study question, but none was used); or design cannot be identified.

N/A: Should not be checked for this question.

3. Method of participant selection described and appropriate?

Yes: Selection strategy designed (i.e., consider sampling frame and strategy) to obtain an unbiased sample of the relevant target population or the entire target population of interest (e.g., all children in school year, all patients presenting to clinic). Where applicable, inclusion/exclusion criteria are described and defined. Sufficient relevant baseline/demographic information clearly characterizing the participants is provided (or reference to previously published baseline data is provided). Differences between those who do and don't take part are well described.

Partial: Selection methods (and inclusion/exclusion criteria, where applicable) are not completely described, but no obvious inappropriateness. Or selection strategy is not ideal (i.e., likely introduced bias) but did not likely seriously distort the results. Sample is described in vague terms and sampling strategy is unclear. Or the study reports incomplete relevant baseline / demographic information (e.g., information on likely confounders not reported). Differences between those who do and don't take part are not sufficiently described.

No: No information provided. Or obviously inappropriate selection procedures. Or presence of selection bias (e.g., methods used ensured that the sample obtained is not representative of the population intended to be analysed) which likely seriously distorted the results.

N/A: Should not be checked for this question.

4. Sample size appropriate?

Yes: Seems reasonable with respect to the outcome under study and the study design. Is the sample size given their target population reasonable? If a sub-sample was used as part of the study is the selection of the subsample described?

Partial: Insufficient data to assess sample size (e.g., sample seems "small" and there is no mention of power/sample size/effect size of interest and/or variance estimates aren't provided). Sample size is reasonable but given the study characteristics a larger sample could have been recruited. There is a high dropout or not responding rate (attrition rate over 20% or under 70% of sample retained at time periods)

No: Sample size is obviously not appropriate, very low number given the inclusion criteria and attrition rate greater than 40% at T1/2/3/etc.

N/A: Should not be checked for this question.

5. Outcome measure(s) of child SA and parenting well defined

Yes: A clear description of how child SA/parenting will be assessed is provided. A clear description (or reference to clear description) of questionnaire/interview content and response options is provided.

Partial: The definition of measures and their contents leaves room for subjectivity, or uncertainty (i.e., measures not reported in detail, but probably acceptable).

No: Measures not defined, or are inconsistent throughout the paper. Or measures employ only ill-defined, subjective assessments, e.g., "anxiety". Or obvious misclassification errors/measurement bias likely seriously distorted the results (e.g., a prospective cohort relies on self-reported outcomes among the "non-anxious" but requires clinical assessment of the "anxious"). No description of questionnaire/interview content or response options.

N/A: Should not be checked for this question.

6. Quality/robustness of measurement(s) of parenting and child SA?

Yes: The measure is well validated (e.g., scale has been tested on a similar population before and author provides reference). If the scale was translated, efforts were made to ensure this was done accurately. Cronbach alpha/internal consistency reported (above .70)

Partial: Cronbach alpha and validity not reported (or Cronbach alpha is below .70) but measure is likely to be acceptable for use.

No: Measure has not been tested before and is not validated.

N/A: Should not be checked for this question.

7. Analytic methods (of child SA/parental psychopathology/parenting) described/justified and appropriate?

Yes: Analytic methods of how child SA/parenting were analysed are described (e.g., "chi square"/ "t-tests"/"Kaplan-Meier with log rank tests", etc.) and appropriate.

Partial: Analytic methods are not reported and have to be guessed at, but are probably appropriate. Or minor flaws or some tests appropriate, some not (e.g., parametric tests used, but unsure whether appropriate; control group exists but is not used for statistical analysis). Or multiple testing problems not addressed.

No: Analysis methods not described and cannot be determined. Or obviously inappropriate analysis methods (e.g., chi-square tests for continuous data, SE given where normality is highly unlikely, etc.). Or a study with a descriptive goal/objective is over-analysed.

N/A: Descriptive case series / reports.

8. Results reported in sufficient detail?

Yes: Results include major outcomes (e.g., child SA/parenting) and secondary outcomes.

Partial: Quantitative results reported only for some outcomes. Or difficult to assess as the study question/objective is not fully described (and is not made clear in the methods section), but results seem appropriate.

No: Quantitative results are reported for a subsample only, or "n" changes continually across the denominator (e.g., reported proportions do not account for the entire study sample, but are reported only for those with complete data -- i.e., the category of "unknown" is not used where needed). Or results for some major or mentioned secondary outcomes are only qualitatively reported when quantitative reporting would have been possible (e.g., results include vague comments such as "more likely" without quantitative report of actual numbers).

N/A: Should not be checked for this question.

9. Do the results support the conclusions?

Yes: All the conclusions are supported by the data (even if analysis was inappropriate). Conclusions are based on all results relevant to child SA/parenting, negative as well as positive ones (e.g., they aren't based on the sole significant finding while ignoring the negative results). Part of the conclusions may expand beyond the results, if made in addition to rather than instead of those strictly supported by data, and if including indicators of their interpretative nature (e.g., "suggesting,", "possibly").

Partial: Some of the major conclusions are supported by the data, some are not. Or speculative interpretations are not indicated as such. Or low (or unreported) response rates call into question the validity of generalizing the results to the target population of interest (i.e., the population defined by the sampling frame/strategy).

No: None or a very small minority of the major conclusions are supported by the data. Or negative findings clearly due to low power are reported as definitive evidence against the alternate hypothesis. Or conclusions are missing. Or extremely low response rates invalidate generalizing the results to the target population of interest (i.e., the population defined by the sampling frame/ strategy).

N/A: Should not be checked for this question.

Appendix 1.3. Quality assessment scores

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Total
Akinsola & Udoka 2013	2	2	1	2	2	0	1	2	1	**13**
Biller & Zung 1972	1	2	1	1	2	1	1	1	1	**11**
Bogels et al 2011	2	2	1	2	2	1	1	2	2	**15**
Bogels et al 2001	2	2	1	1	2	1	1	2	2	**14**
Caster et al 1999	2	2	2	2	2	1	1	2	2	**16**
Cunha et al 2008	2	2	1	1	2	2	1	2	2	**15**
Festa & Ginsburg 2011	2	2	1	1	2	1	2	2	2	**15**
Fisak & Mann 2010	2	2	1	2	2	1	1	2	2	**15**
Ghazwani et al 2016	1	2	1	2	1	1	1	1	1	**11**
Gray et al 2011	2	2	1	2	2	1	1	2	2	**15**
Greco & Morris 2002	2	2	2	1	2	1	1	2	2	**15**
Gruner et al 1999	2	2	1	2	2	1	1	2	2	**15**
Gulley et al 2014	2	2	1	1	2	1	1	2	2	**14**
Huang et al 2012	2	2	2	2	2	1	2	2	2	**17**
Hummel & Gross 2001	2	2	2	1	2	1	1	2	2	**15**
Hutcherson & Epkins 2009	2	2	2	1	2	2	1	2	2	**16**
Johnson et al 2005	2	2	2	2	2	1	1	2	2	**16**

Knappe et al 2009a	2	2	2	2	2	2	1	2	2	**17**
Knappe et al 2009b	2	2	2	2	2	2	1	2	2	**17**
Knappe et al 2009c	2	2	2	2	2	2	2	2	2	**18**
Lewis-Morrarty et al 2012	2	2	2	1	2	2	1	2	2	**16**
Lieb et al 2000	2	2	2	2	2	2	2	2	2	**18**
Loukas 2009	2	2	2	2	2	2	1	2	2	**17**
Mellon & Moutavelis 2011	2	2	1	2	2	1	2	2	2	**16**
Morris & Ossterhoff 2016	2	2	1	1	2	2	1	2	2	**15**
Mousavi et al 2016	2	2	1	2	2	2	1	2	2	**16**
Murray et al 2014	2	2	2	2	2	1	1	2	2	**16**
Papini & Roggman 1992	2	2	1	1	2	1	1	2	2	**14**
Rapee 2014	2	2	1	2	2	1	1	2	2	**15**
Rork & Morris 2009	2	2	2	1	2	1	1	1	1	**13**
Rowe et al 2015	2	2	1	2	2	2	1	2	2	**16**
Rudolph & Zimmer-Gembeck 2014	2	2	1	2	2	1	2	2	2	**16**
Scanlon & Epkins 2015	2	2	2	2	2	1	2	2	2	**17**
Schreier & Heinrichs 2010	2	2	2	2	2	2	1	2	2	**17**
Su et al 2016	2	2	1	2	2	1	2	2	2	**16**
Vreeke et al 2013	2	2	1	2	2	2	1	2	2	**16**
Wei & Kendall 2014	2	2	1	2	2	2	1	2	2	**16**

Chapter 2

Empirical Research Project

Reducing children's social anxiety symptoms through a parent-administered cognitive bias modification intervention: a feasibility randomised controlled trial

Supervised by Dr Jennifer Lau and Professor Cathy Creswell

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Abstract

Background: Social anxiety is common and impairing in primary school children, and may persist to predict later social anxiety disorder. Intervening early may therefore be beneficial. Cognitive Bias Modification of Interpretations (CBM-I) targets maladaptive interpretations of everyday ambiguous social situations. A parent-delivered CBM-I intervention has the potential to be a simple, acceptable and effective method of early intervention for emerging social anxiety symptoms.

Method: A multiple-session, parent-delivered CBM-I intervention was compared to an active control (AC) intervention in a feasibility RCT. 31 children selected for raised social anxiety levels, and their parents, were recruited via screening in primary schools. Outcomes primarily assessed the feasibility and acceptability of the trial methods and interventions. Preliminary data on post-intervention outcome scores on a range of measures assessing interpretation biases and anxiety symptoms were also examined.

Results: The study methods and interventions were shown to be feasible to deliver and acceptable to children, parents and schools. Preliminary outcome data showed that there were small improvements in cognitive biases and anxiety symptoms in the CBM-I condition, but did not suggest that it offered benefits over the AC intervention.

Conclusions: Parent-delivered CBM-I shows promise as a feasible and acceptable intervention for early social anxiety symptoms in school children, although questions remain about its utility. A larger RCT may be warranted in order to assess fully its capacity to modify cognitive bias and social anxiety symptoms.

Introduction

Social anxiety in children

Social anxiety (SA) is one of the most common mental health disorders in childhood, with an estimated prevalence of 5-10% (Beesdo et al., 2007; Grant et al., 2005). It is associated with a range of adverse cognitive, social and emotional outcomes in children, including marked underachievement at school, social avoidance and isolation, and other comorbid mental health problems (Beidel et al., 1999; Bernstein et al., 2008; Erath et al., 2007; Mazzone et al., 2007; Spence et al., 1999), and evidence suggests that subthreshold SA symptoms in children may alone cause significant impairment (Van Roy et al., 2009). Furthermore, SA is one of the most common anxiety disorders across the lifespan, with an estimated lifetime prevalence rate of 12% (Kessler et al., 2005). Many cases of SA disorder (SAD) develop during childhood, and in the absence of treatment tend to persist through adolescence and adulthood (Bruce et al., 2005), where SAD is associated with underachievement in the workplace and an increased risk of other co-morbid mental health conditions, alcohol and drug use and suicide (Wittchen & Fehm, 2003; Zimmermann et al., 2003). As such, intervening early to treat emerging symptoms of SA may offer substantial benefit.

Interventions for social anxiety in children

The evidence base guiding the psychological treatment of SA in children is still developing, and further research is needed in this area. The most extensively evaluated treatment for childhood anxiety disorders is Cognitive Behavioural Therapy (CBT). Recent reviews have found that CBT is an effective treatment for anxiety disorders in children and adolescents, but that heterogeneity amongst trial outcomes is high, and there is limited evidence that it is more effective than other active treatments (James et al., 2015; Reynolds et al., 2012). There is also some suggestion from recent trials that children and young people with SAD in particular may respond less well to existing psychological therapies, such that a significant proportion do not improve (Compton et al., 2014; Ginsburg et al., 2011; Hudson et al., 2015), although more favourable outcomes have been found with disorder-specific protocols (see Scaini et al., 2016). Furthermore, treatment-seeking is low and access to these therapies is limited, meaning that the majority of children with SAD do not receive any input from clinical services (Merikangas et al., 2011). CBT is increasingly also being evaluated as a method of preventive or early intervention for emerging anxiety symptoms, often delivered through school-based programmes, either universally or targeted towards at-risk children. These have generally been shown to be effective, although again there is variability in trial results, and the majority of these programmes are non-specific, focussing on general anxiety rather than specific symptoms (see

Neil & Christensen, 2009). There remains, therefore, a crucial need to develop and evaluate innovative treatments targeting SA in children that are effective, cost-effective and accessible.

Cognitive bias modification interventions

Cognitive Bias Modification (CBM) interventions have received increasing attention in recent years and have been advanced as a potentially effective intervention for emotional disorders in both adults and young people. However, there is some controversy over the utility of CBM based on the results of research trials (see Cristea et al., 2015a; Cristea et al., 2015b), and it may perhaps be most helpful as an adjunct to existing treatments (such as CBT), or to target mild to moderate subthreshold symptoms (Blankers et al, 2016). CBM interventions are designed to modify specific cognitive biases that have been shown to be implicated in the development and maintenance of anxiety and mood disorders, including SA, in both adults (Bar-Haim et al., 2007; Hertel & Mathews, 2011; Hirsch & Clark, 2004; Mathews & MacLeod, 2005) and children (Lau et al., 2012; Muris et al., 2000a; Pass et al., 2012; Vassilopoulos & Banerjee, 2008). Cognitive Bias Modification of Interpretations (CBM-I) interventions aim to alter the negative or 'threat' interpretations of ambiguous situations that are characteristic of anxious individuals, to more adaptive, realistic interpretations. Interventions involve repeatedly asking participants to complete unresolved ambiguous scenarios, whereby 'successful' completion is achieved by endorsing a positive or neutral outcome. These decisions are positively reinforced, with the aim that these benign assessments of situations gradually become more automatic, thereby altering the negative bias and reducing anxious arousal. As social situations are often inherently ambiguous, CBM-I interventions may offer a potentially powerful strategy for reducing SA. There are two key reasons why CBM-I methods may be particularly applicable for, and acceptable to, children: i) research shows that emotional information processing styles become more stable and concrete through adolescence (e.g. Hankin et al., 2009), and intervening in childhood to encourage the development of adaptive interpretational styles may therefore be optimal; ii) the relatively straightforward CBM-I protocols are potentially less complex and effortful than 'top-down' approaches such as CBT, and have the potential to be delivered in various 'low-intensity' and child-friendly formats, including by non-healthcare professionals (e.g. parents and teachers).

A recent meta-analysis synthesising 23 trials of CBM interventions for emotional disorders in children and adolescents found significant effects on the targeted cognitive biases. However, no effects were found for mental health outcomes, including anxiety and negative mood (Cristea et al., 2015b). With regard to SA specifically, several trials with children and young people have shown promise in targeting negative cognitive biases and reducing SA symptoms (Lau et al.,

2013; Vassilopoulos et al., 2009; Vassilopoulos et al., 2012a), although some findings have been less consistent (Orchard et al., 2017; Vassilopoulos et al., 2012b). There may be a number of explanations for these mixed findings. First, many previous CBM studies have used unselected samples of children who did not necessarily have raised anxiety levels or identified cognitive biases. Vassilopoulos et al (2009; 2012a) found that change in SA symptoms following CBM-I training correlated with baseline anxiety levels, and studies have reported stronger effects of CBM training in children high in trait anxiety (Muris et al., 2008). Second, it is hypothesised that CBM interventions in children may have only a temporary or superficial effect on cognitive biases, which does not endure beyond the intervention period or is not powerful enough to alter deeper dysfunctional cognitive processes (Cristea et al., 2015b). This may be particularly the case given that many studies have involved single-session CBM training protocols and/or a relatively low dose of learning trials. Third, there may be an effect of demand characteristics, given that in many cases the tasks used to measure interpretation bias at pre- and post-intervention are similar to the CBM-I training tasks; participants may simply get better at completing the tasks, which may explain the significant effect on interpretations but not anxiety or mood (e.g. Cristea et al., 2015b; Lau, 2013). Lastly, Lau (2015) commented that many children and young people may disengage with CBM training, and argued that further development of more engaging and ecologically valid, and therefore more acceptable and generalisable, training methods was necessary.

Parent-delivered CBM-I

The current study built on previous research by testing a parent-delivered CBM-I intervention for SA in children. The intervention involved parents helping their children to reappraise negative interpretations of social situations through reading social stories together over consecutive evenings, and as such was designed to be engaging, age-appropriate and ecologically valid. This approach is consistent with a growing body of research on the involvement of parents in the delivery of low-intensity CBT and application of CBT techniques for child anxiety, which may have benefits both in terms of the ecological validity and the cost-effectiveness of the treatment (Creswell et al., 2017; Thirlwall et al., 2013). Furthermore, it draws on research suggesting that parental anxiety, cognitions and behaviour play an important role in the onset and maintenance of anxiety in children. For example, there is evidence showing that children of anxious parents, including socially anxious parents, are at greater risk of developing social anxiety themselves (see Knappe et al., 2010). There is also research suggesting that children may develop information-processing biases implicated in anxiety disorders through social learning mechanisms, such as parental modelling (Field, 2006), and some evidence that this may be relevant specifically for SA, whereby parents may model socially-

anxious cognitions or behaviours to their children (Caster et al., 1999; Johnson et al., 2005; Schreier & Heinrichs, 2010). If maladaptive interpretative styles are adopted through this mechanism, delivering CBM-I training through parents may be an effective and developmentally-appropriate method for teaching more benign and adaptive interpretative styles. Furthermore, parents of anxious children have been found to have more negative expectations of their child's competencies and coping abilities than parents of non-anxious children (Creswell et al., 2006; Creswell et al., 2011; Micco & Ehrenreich, 2008; Orchard et al., 2015; Wheatcroft & Creswell, 2007), and there is some evidence that this applies to SA (e.g. Schreier & Heinrichs, 2010). This is thought in turn to lead to parental behaviours which maintain the anxiety (Creswell et al., 2011; Lester et al., 2009). Involving parents in CBM-I training may therefore not only help to facilitate the generalisation and maintenance of children's new thinking styles, but may additionally help parents both to develop greater awareness of their own potentially maladaptive cognitions and behaviours, and to develop more adaptive styles, which may in turn impact positively on their own anxiety and parenting as well as their child's anxiety. As such, situating the CBM-I intervention within the context of parent-child interactions may represent a particularly powerful approach to treating SA symptoms in children, and may have additional secondary benefits for parents.

This parent-delivered CBM-I intervention has been tested in two previous small-scale studies, both of which involved unselected samples of school children. In the first, it was compared to a test-retest (no intervention) control group in children ranging in age from 7-11 years, and large effects of the intervention were found on both child interpretation biases and SA symptoms (Lau et al., 2013). The second study compared the CBM-I intervention to another active control intervention in 10-11 year old children undergoing transition to secondary school (Cox et al., 2016). Whilst this second study found a significant effect on interpretation biases only in the CBM-I condition, SA symptoms reduced significantly in both groups. The authors hypothesised that the most plausible explanation for these findings was that the control task (a workbook designed to help pupils with transition) was also actively anxiety-reducing.

Current study

The present study aimed to assess the feasibility, acceptability and preliminary outcomes of a modified version of the parent-delivered CBM-I intervention. This study aimed to build on the aforementioned studies and existing CBM-I protocols with children. The parent-administered CBM-I intervention was delivered to children aged 7-10 years selected for raised levels of SA symptoms. This selection process aimed to target children who may be at risk of developing SA, at an age when social worries and fears may start to become more concrete, but have not yet

become entrenched (Hudson & Rapee, 2000; Rapee & Spence, 2004), offering a window of potential opportunity for effective preventive or early intervention. In order to strengthen and consolidate the CBM-I training, the intervention was delivered in multiple sessions over an extended period of two weeks (rather than three days). Children's SA symptoms were measured at both post-intervention and an additional follow up two to four weeks later, to examine whether any improvements following the intervention endured beyond the training period, and a measure of generalised anxiety symptoms was included, to examine whether any improvements in anxiety symptoms were specific to SA. Furthermore, an additional measure of children's interpretations of ambiguous social scenarios was included, which used an assessment method that differed from the CBM-I training tasks, and was therefore less subject to demand characteristics. The CBM-I intervention was compared to an active control (AC) intervention, which aimed to address the limitations of the previous control conditions described above. The AC intervention was designed to control for the effects of parental attention, exposure to and consideration of social situations, but did not involve the active modification of biases. In addition, parents' SA and generalised anxiety symptoms, and interpretations of social situations (both in relation to themselves and their expectations about their child) were measured, in order to investigate whether the CBM-I intervention resulted in any secondary changes in parental outcomes.

Aims of the current study

The purpose of this study was to assess the feasibility, acceptability and preliminary outcomes of a parent-delivered CBM-I intervention in primary school-aged children with raised SA levels. The CBM-I intervention (CBM-I) was compared to an active control intervention (AC) in a feasibility RCT. Outcomes assessed: i) the feasibility of recruitment, retention and data collection; ii) the acceptability of data collection methods and the CBM-I and AC interventions; and iii) descriptive statistics and between-group post-intervention effect sizes and confidence intervals on a range of outcome measures, in order to assess the preliminary utility of CBM-I in modifying interpretation biases and reducing SA symptoms, and to inform future planning for a larger RCT.

Method

Participants

Participants were 31 children aged 7-10 years (*M*=9.00, *SD*=0.88) and their parents/caregivers, recruited from four state primary schools in Greater London. 590 children completed the screening questionnaire. Of these children, 207 scored at or above 10% cut-off scores (Muris et

al., 2000c) and were invited to participate in the study, along with their parent. 18 (58.1%) of the participating children were female and 13 were male (41.9%). The mean age of parents was 41.70 years (*SD*=7.06, range: 28-54), and the large majority (90.3%) were mothers. 74.2% children and 83.8% parents identified as white, and 74.2% parents reported having a higher education qualification. Full demographic characteristics of the participants are shown in Table 2.1.

Procedure

Prior to commencement of the study, ethical approval was obtained from the Psychiatry, Nursing and Midwifery Research Ethics Subcommittee at King's College London (reference number: HR-15/16-2003). 19 primary schools in the Greater London area were approached and asked whether they would be willing to be involved in a study on children's thinking about social situations and social worries, of which four agreed to participate. An opt-out consent procedure was used to screen children in years 3-5, whereby parents were sent brief information about the study and asked to return a reply slip if they did not wish their child to complete the screening questionnaire. This method was chosen in order to increase participation and the representativeness of the sample with respect to both the school population and the anxiety distribution. All pupils whose parents did not opt out were asked to complete the screening measure. The measure was completed individually by children in class groups. The researcher read each question aloud and provided support where needed.

Children were screened for SA symptoms using the Social Phobia subscale of the Spence Children's Anxiety Scale (SCAS-SP; Spence, 1998). This subscale consists of six items rated on a four-point Likert scale (e.g. *'I worry about what other people think of me'*). Scores correlated moderately well (*r*=0.72) in the current sample with total scores on the Social Anxiety Scale for Children – Revised (SASC-R; La Greca & Stone, 1993). 10% cut-off scores were used to identify children with raised SA levels according to norm data published by Muris et al (2000c). Children scoring at or above the 10% cut-off scores were identified and their parents were sent an invitation to participate and to a study information meeting held at school. At this meeting the researcher presented the study and answered questions from parents. Parents who were unable to attend the meeting provided contact details and were contacted directly by the researcher. Parents who wished to take part with their child gave written consent and completed a demographics questionnaire and the baseline measures. The researcher then met with children individually at school to explain the study, gain written assent and complete the baseline measures. Children were given an intervention pack and parent-child dyads completed the intervention tasks over the following two weeks. Parents were offered daily reminders to

complete the tasks by email or text. The researcher met again with children at school at the end of the intervention period to complete the post-intervention and feedback measures, and questionnaire packs were sent home for parents to complete and return. Two to four weeks later children were asked to complete the follow-up measure. Participants were given a £10 voucher for participating in the study.

Randomisation

Participants were randomised to receive CBM-I or AC with an allocation ration of 1:1. A randomisation sequence was pre-generated and intervention packs were placed in sealed envelopes according to this sequence with an identifying participant number. Packs were then allocated to participants as completed sets of parental baseline measures were received, linking each participant to a participant number. The researcher was therefore blind to allocation at the point of randomisation and baseline assessment. Participants were informed in the intervention pack whether they had been allocated to Group A or B but were blind to intervention status.

Interventions

CBM-I intervention

The CBM-I intervention booklet contained 90 scenarios, read by parents and children together on nine evenings across a two-week period (ten items per evening). 45 of the scenarios were translations of those developed by Vassilopoulos et al (2009), which have been used in several similar studies (e.g. Cox et al., 2016; Lau et al., 2013; Orchard et al., 2017) and 45 were additional similar stories developed by the researchers for the current study. Each story described an ambiguous social situation (e.g. *'It is the history class. You can't find your history book in your bag. Why do you think this happens?*) and was presented on a single page with an accompanying graphic. At the end of each scenario, parents were prompted to ask children why the situation happened, and children were provided with both a benign and a negative account (e.g. for the example above the benign account is: *'I took it home but didn't put it back in my bag yesterday after reading it'*; while the negative account is: '*My schoolmates took it from my bag and hid it to make fun of me'*). After the child indicated their chosen interpretation they were given feedback on the 'most helpful thought in this situation' upon turning the page, which was always the benign interpretation. The order of presentation of benign and negative interpretations was random. Parents and children were then prompted to imagine this scenario together, in order to encourage imaginal processing of the benign outcome.

Table 2.1. Demographic characteristics of participants

Baseline Characteristic	**CBM-I** (*n*=16)	**Control** (*n*=15)	**Total sample** (*n*=31)
Child age, *M (SD)*	8.95 (1.10)	9.08 (0.66)	9.00 (0.88)
Child gender, *n* (%)			
Male	6 (37.5)	7 (46.7)	13 (41.9)
Female	10 (62.5)	8 (53.3)	18 (58.1)
Child ethnicity, *n* (%)			
White British	14 (87.5)	5 (33.3)	19 (61.3)
White Other	2 (12.5)	2 (13.3)	4 (12.9)
White and Asian	N.A.	2 (13.3)	2 (6.5)
White and Black African	N.A.	1 (6.7)	1 (3.2)
Black African / Caribbean	N.A.	2 (13.3)	2 (6.5)
Other Black	N.A.	1 (6.7)	1 (3.2)
Other Mixed	N.A.	2 (13.3)	2 (6.5)
Parent age, *M (SD)*	42.43 (7.74)	41.05 (6.77)	41.70 (7.06)
Parent gender, *n* (%)			
Male	1 (6.3)	2 (13.3)	3 (9.7)
Female	15 (93.8)	13 (86.7)	28 (90.3)
Parent ethnicity, *n* (%)			
White British	14 (87.5)	7 (46.7)	21 (67.7)
White Other	2 (12.5)	3 (20.0)	5 (16.1)
White and Asian	N.A.	1 (6.7)	1 (3.2)
White and Black Caribbean	N.A.	1 (6.7)	1 (3.2)
Black African / Caribbean	N.A.	2 (13.3))	2 (6.5)
Other Black	N.A.	1 (6.7)	1 (3.2)
Parent education, *n* (%)			
Master's degree	4 (25)	N.A.	4 (12.9)
Postgraduate diploma	4 (25)	4 (26.7)	8 (25.8)
Bachelor's degree	4 (25)	4 (26.7)	8 (25.8)
Diploma	1 (6.3)	2 (13.3)	3 (9.7)
A-Level	N.A.	3 (20.0)	3 (9.7)
GCSE	2 (12.5)	1 (6.7)	3 (9.7)
NVQ/GNVQ	N.A.	1 (6.7)	1 (3.2)
None	1 (6.3)	N.A.	1 (3.2)
Parent work status, *n* (%)			
Working full-time	4 (25)	8 (53.3)	12 (38.7)
Working part-time	6 (37.5)	3 (20.0)	9 (29.0)
Homemaker	4 (25)	2 (13.3)	6 (19.4)
Student	N.A.	2 (13.3)	2 (6.5)
Unemployed	1 (6.3)	N.A.	1 (3.2)
Maternity/paternity leave	1 (6.3)	N.A.	1 (3.2)
Household income (£), *n* (%) [a]			
10,000 – 19,999	2 (12.7)	3 (20.0)	5 (16.7)
20,000 – 29,999	N.A.	N.A.	N.A.
30,000 – 39,999	1 (6.3)	2 (13.3)	3 (10.0)
40,000 – 40,999	1 (6.3)	4 (26.7)	5 (16.7)
50,000 – 74,999	5 (31.3)	N.A.	5 (16.7)
75,000 – 99,999	3 (18.8)	2 (13.3)	5 (16.7)
100,000 – 150,000	N.A.	4 (26.7)	4 (13.4)
>150,000	3 (18.8)	N.A.	3 (10.0)

[a] One participant in the CBM-I group did not provide household income.

Active control intervention

In the AC condition, a modified version of the same 90 scenarios was read by parents and children together following the procedure described above. Scenarios were modified such that they described situations with social content, but without the ambiguity of the index scenarios. Instead of being asked at the end of each situation why it happened, children were asked a question which was not related to the social aspects of the situation (e.g. *'It is the history class. Your teacher says that you will be learning about a new topic today. What do you think the topic is?'*) and were given two options to choose from (e.g. '*The topic is Ancient Greece and how people lived then'* or '*The topic is Kings and Queens in Tudor times'*). Similarly to the index intervention, upon turning the page children were given feedback on the outcome of each scenario, and parents and children were prompted to imagine this scenario together. Parents were advised that the given outcomes were not intended to be the 'right' answers (as either option was equally viable), but instead a way of helping children to engage with the scenarios. Again, the order of presentation of the options was random. As described above, these tasks were designed to control for the effects of parental attention, exposure to and consideration of social situations, and making decisions about outcomes relating to these situations, but without the active modification of biases included in the CBM-I intervention.

Assessment of outcomes

Feasibility

Feasibility of recruitment and data collection were assessed by examining participant flow through the study, according to CONSORT guidelines (Consolidated Standards of Reporting Trials; Schulz et al., 2010). Specifically, the following were assessed: i) number of children meeting eligibility criteria; ii) number of participants consenting to the study; iii) number of participants randomised; iv) number of participants completing the interventions; v) number of participants completing post-intervention outcome measures; vi) number of participants completing the follow up outcome measure. These counts were expressed as a percentage of the number of participants in the initial sample pool, and in relation to the previous step in participant flow.

Acceptability

The acceptability of data collection methods, the CBM-I and AC interventions were assessed through feedback questionnaires completed by children, parents and schools (see Appendices

2.11-2.13). Questionnaires combined questions rated on Likert scales and free-text responses. Likert scales required children and parents to rate how they had found completing the questionnaires, how helpful and enjoyable they had found the programme, and its perceived impact. Parents were additionally asked whether they felt the programme was the right length and whether the study meeting had been helpful. Free-text responses allowed participants to comment on what they felt had been the most helpful/enjoyable aspects of the study, and whether they had recommendations for modifications to the programme or trial methods. Schools were similarly asked how interesting and enjoyable they had found participating in the study, whether the screening and study meeting were helpful and easy to organise, and whether they felt the project had been beneficial for the school.

Clinical outcome measures

A range of outcome measures were included in order to assess the feasibility and acceptability of these measures, and to generate between-group post-intervention effect sizes and confidence intervals, in order to assess the preliminary utility of the CBM-I intervention and to inform power analysis for a future full-scale RCT.

Child interpretations of social situations

Children's interpretations of social situations were assessed at baseline and post-intervention using the Ambiguous Situations Interpretation Scale (ASI), a translated version of the measure developed by Vassilopoulos and Banerjee (2009). The ASI contains 16 questions, half of which were administered at baseline and half at post-intervention assessment. Each question describes an ambiguous social situation, to which two alternative interpretations are presented: one represents a negative interpretation and the other a benign interpretation. For example: '*During maths class, the teacher asks children to sit in pairs to solve an exercise. However, he makes you sit by yourself. Why do you think this happened to you?': a) 'There were no other children who could have sat with me'; b) 'Nobody wants to sit with me'*. Each interpretation is rated by the child on a Likert scale of 1-5 where 1 = '*I would not think that at all'* and 5 = '*I would definitely think that'*. The order of presentation of benign and negative interpretations was random. The measure produces two scales, corresponding to endorsement of benign and negative interpretations. Cronbach's α (across both groups, at pre- and post-intervention, respectively) was: for benign interpretations, 0.67 and 0.80; for negative interpretations, 0.91 and 0.88. Negative interpretations correlated significantly with SA symptoms measured by the SASC-R (r=0.60).

In addition, children completed the threat perception measure developed by Muris et al (Muris et al., 2000b). As discussed above, this outcome was included as a measure of interpretations which differed from the CBM-I training tasks, and was therefore less subject to potential demand characteristics. In this task children are read seven short social stories sentence by sentence (each is five sentences in total), and are asked at the end of each sentence to decide whether they think the story will have a bad end (scary story) or a good end (non-scary story). Six of the stories are ambiguous and one has a definite bad end, in order to increase the perceived validity of the task. This gives measures of both frequency and threshold of threat perception. Higher frequency scores, and lower threshold scores, are associated with greater threat interpretation. Cronbach's α was (at pre- and post-intervention, respectively): for frequency, 0.74 and 0.83; for threshold, 0.76 and 0.79. Threat frequency and threshold correlated significantly (positively and negatively, respectively) both with SA symptoms measured by the SASC-R (r=0.46 and r= -0.47), and with negative interpretations measured by the ASI (r=0.58 and r= -0.52).

Child social anxiety symptoms

Child SA symptoms were assessed at baseline, post-intervention and follow-up using the Social Anxiety Scale for Children – Revised (SASC-R) (SASC-R; La Greca & Stone, 1993). This widely-used scale contains 22 items describing common social worries and avoidance of common social situations that children might experience (e.g. *'I worry that other kids don't like me'* and '*I'm afraid to invite others to my house because I'm afraid they might say no'*). These are rated on a Likert scale from 1-5, reflecting the frequency with which they are experienced. A composite score is computed by summing all items. Reliability analysis gave a Cronbach's α of 0.82-0.85 across the three measurement time points. Prior studies report negative associations between this scale and self-reported social acceptance and global self-worth, and positive associations with peer rejection in this age range (Ginsburg et al., 1998; Reijntjes et al., 2007).

Child generalised anxiety symptoms

Child generalised anxiety (GA) symptoms were assessed using the Generalised Anxiety Disorder subscale of the Spence Children's Anxiety Scale (SCAS-GAD; Spence, 1998). This subscale contains 6 items rated by children on a 4-point Likert scale (e.g. '*I worry about things*'). Cronbach's α was 0.67 at both baseline and post-intervention.

Parent interpretations of social situations

Parents' interpretations of social situations were assessed using the social items of the Hypothetical Ambiguous Scenarios Questionnaire (HASQ; Butler & Mathews, 1983). This

comprises two scales, a self-referent and a child-referent scale, which include four and six hypothetical scenarios, respectively. The self-referent version includes ambiguous situations relating to the parent (e.g. "*Not long after starting your new job your boss asks to see you*") and the child-referent version includes scenarios relating to the child (e.g. "*Your child arranges to have a party at 4 o'clock and by half past 4 no one has arrived*"). For the current study, the original measure was modified slightly, in order to simplify it and make it consistent with the child measure of interpretations. Thus for each item, parents were presented with two alternative interpretations of the situation (one negative and one benign), and rather than being asked to choose between them (forced choice, as in the original version), were asked to rate on a scale from 0-10 (where 0 = '*I would not think that at all'* and 10 = '*I would definitely think that')* how much they endorsed each one. For the child-referent version parents were asked to imagine their child in the situation, and rate how likely they thought their child would be to make each interpretation. Scores were totalled across the scenarios, and separate scores calculated for negative and benign interpretations. For the self-referent version, Cronbach's α was (at pre- and post-intervention, respectively): for benign interpretations, 0.61 and 0.74; for negative interpretations, 0.75 and 0.88. For the child-referent version, Cronbach's α was (at pre- and post-intervention, respectively): for benign interpretations, 0.73 and 0.74; for negative interpretations, 0.72 and 0.74. Self-referent negative and benign interpretations correlated significantly with SA symptoms measured by the SPIN (r=0.75 and r= -0.64).

Parent social anxiety symptoms

Parents' SA symptoms were assessed using the widely-used Social Phobia Inventory (SPIN; Connor et al., 2000). This is a 17-item scale, rated on a Likert-scale from 0-4 (e.g., '*Parties and social events scare me'* and '*Being criticised scares me a lot'*). Cronbach's α was 0.82 at baseline and 0.90 at post-intervention.

Parent generalised anxiety symptoms

Parents' GA symptoms were assessed using the Generalised Anxiety Disorder – 7 Item Scale (GAD-7; Spitzer et al., 2006). This is a widely-used scale measuring symptoms of generalised anxiety disorder (e.g. '*feeling nervous, anxious or on edge')* on a four-point scale. Cronbach's α was 0.91 at baseline and 0.90 at post-intervention.

Sample size

In line with guidelines for feasibility studies, no formal power calculation was conducted (Arain et al., 2010). There are no definitive guidelines on appropriate sample size for feasibility RCTs,

and recommendations in the literature vary (Lancaster et al., 2004). However, an overall sample size of at least 12 participants per trial arm has been recommended as providing sufficient data to gain an accurate estimation of the feasibility and acceptability of the intervention and trial methods, and to provide a reasonable range of estimates to inform sample size calculation for a definitive RCT (Julious, 2005). In the current study, 16 participants were allocated to CBM-I and 15 to AC.

Data analysis

In accordance with guidelines for feasibility studies, data analysis was primarily descriptive to inform the planning of a future RCT (Arain et al., 2010; Lancaster et al., 2004). Feasibility of recruitment and data collection were assessed by analysing the flow of participants through the study according to CONSORT guidelines (Schulz et al., 2010). The acceptability of data collection methods and the CBM-I and AC interventions were assessed through analysing frequencies of quantitative feedback scores from participants in both groups, and participants' free-text responses for responses relating to acceptability. Descriptive data were calculated for outcome scores in the form of means and standard deviations. One-way analyses of covariance (ANCOVAs) were used to compare outcomes between groups at post-intervention and follow-up, adjusting for baseline scores. This is considered the most appropriate and powerful method of analysis for feasibility RCTs (see Vickers & Altman, 2001). Given the preliminary nature of the statistical analysis and the small sample size, analyses were conducted based on the observed data values, without adjusting for missing data. Prior to conducting analyses, continuous data were assessed in relation to the assumptions of parametric tests. Where assumptions were violated, confirmatory analyses were conducted by running analyses with 1000 bootstrap samples. The results of bootstrapped and non-bootstrapped analyses were consistent, suggesting robustness of the original analyses to assumption violations. The results of the original, non-bootstrapped analyses are therefore reported. Results are presented as a mean between-group difference, and Cohen's *d* effect size (Cohen, 1988), both with associated 95% confidence intervals.

Results

Feasibility

Figure 2.1 presents the CONSORT (Consolidated Standards of Reporting Trials; Schulz et al., 2010) diagram showing the flow of participants through the trial. 54/644 (8.4%) parents of children invited to complete the screening measure opted their child out, resulting in 590 children completing the questionnaire. 207 (35.1%) children who completed the screening

measure scored at or above the 10% cut-off scores suggested by Muris et al (2000c) and were invited to participate with their parents; 383 were not invited to continue the study as they scored below the cut-off values. Of the 207 children and their parents who were invited to participate in the study, 32 (15.5%) gave consent (73.4% did not respond to the invitation, and 11.1% declined participation). 31 of these participants (15.0%) were randomised (one parent did not return the baseline questionnaires): 16 to CBM-I and 15 to AC. 16 (100%) child-parent dyads completed CBM-I and 14 (93.0%) child-parent dyads completed AC. 88.9% of completers in the CBM-I group and 81.8% of completers in the AC group reported that they had completed at least seven sessions of the nine training days. Post-intervention outcome measures were completed by 100% children and 81.3% parents in the CBM-I group (although one parent completed child-related and feedback outcomes only), and by 93.0% children and 86.7% parents in the AC group. The follow-up questionnaire was completed by 100% children in the CBM-I group and 93.0% children in the AC group.

Acceptability

Participants' Likert responses to key feedback questions are summarised in Table 2.2. These are discussed below, together with a synthesis of their free text responses (whereby the percentage of responding participants who made comments relating to each aspect of feedback are given in brackets).

Data collection

Quantitative feedback

Table 2.2 shows that 50.0% children reported finding it enjoyable and interesting completing the outcome measures with the researcher, and 43.3% reported that it was 'fine'. 92.4% responding parents reported that they did not mind completing the questionnaires, although only 27.0% parents reported finding them moderately to very interesting. Approximately half of the parents able to attend indicated that they found the study information meeting held at school helpful.

Free-text response feedback

A proportion of children (33.3%) commented that completing the questionnaires with the researcher was one of their favourite aspects of the study. A few parents (11.5%) highlighted that one of the most beneficial aspects of the study was being made more aware through the initial screening questionnaire that their child may feel anxious in social situations. A number of parents (26.9%) suggested holding the study meeting outside of standard working hours to facilitate attendance, and also proposed other options that would be acceptable for pre-study

contact, such as telephone or email communication. One parent commented that s/he would have preferred a 1-1 meeting with a researcher.

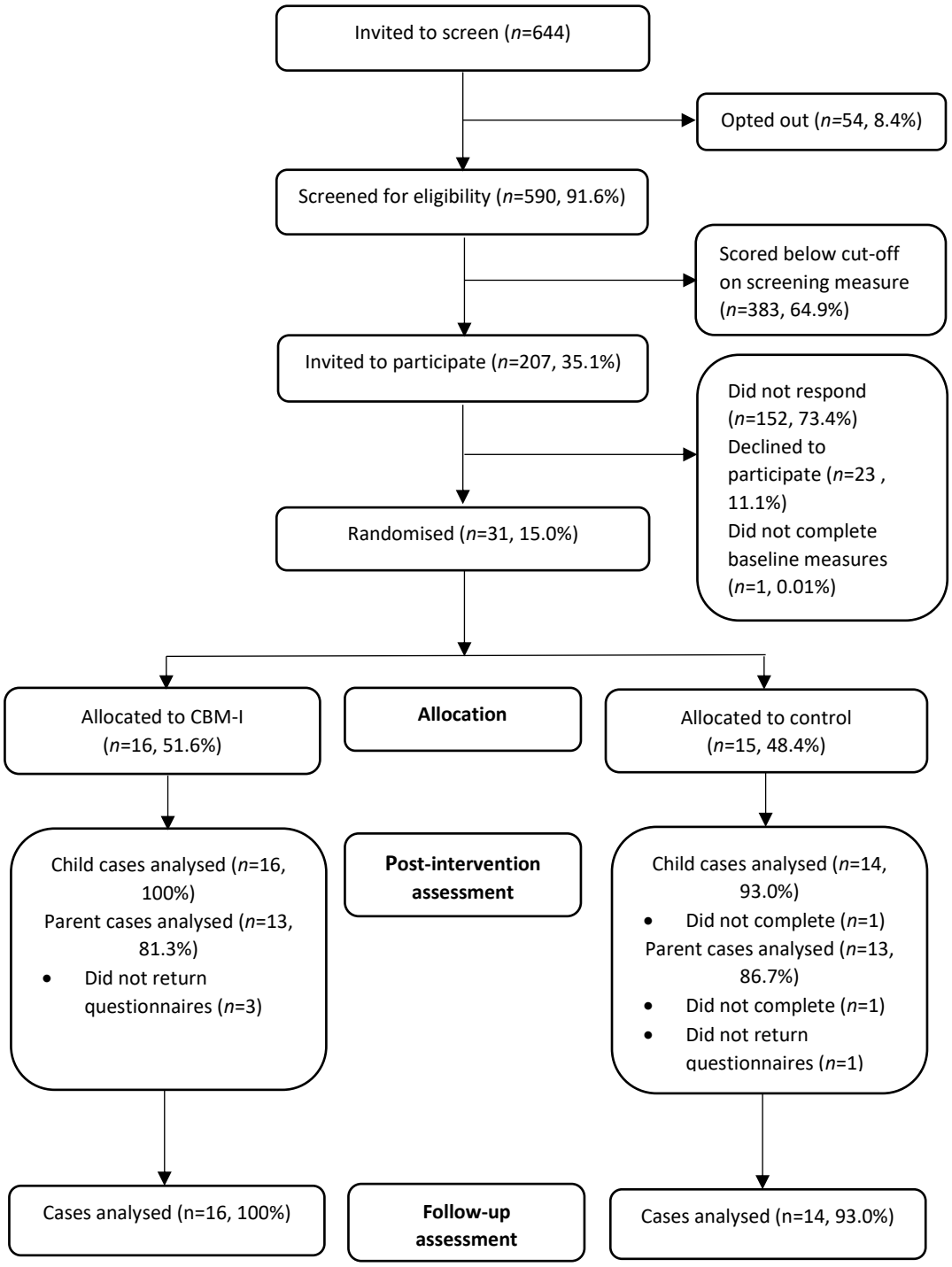

Figure 2.1. CONSORT diagram

CBM-I intervention

Quantitative feedback

Table 2.2 shows that the majority of children reported finding the CBM-I intervention moderately to very helpful (81.3%) and enjoyable (75.0%). 69.2% parents reported finding it

helpful and enjoyable. The majority of parents reported that the programme felt the right length overall and that there were the right number of stories each day, although some felt that it should have been longer overall, and a proportion felt that there should be fewer stories each day. 56.3% children indicated that they felt more confident and happy in social situations following the programme, whereas parents reported feeling that the intervention had had more limited impact on both their child's and their own worries about social situations. However, they felt that the intervention had been somewhat more helpful in improving their understanding of their child's thoughts, feelings and behaviour in social situations, as well as their communication with their child.

Free-text response feedback

Children reported two main favourite aspects of the intervention: spending time with their parent and reading the booklets together (43.8%), and thinking about how they would think, feel and act in social situations (25%). Similarly, feedback from many parents (53.8%) was that they found it valuable to set time aside to spend with their child, discuss social situations together and understand how their child tends to think and feel at these times. Although children generally reported finding the booklet fun to work through (as above), a minority (37.5%) reported that the programme was quite long, and that they started to find the scenarios tedious after a while due to the repetitive nature of the activities. Some parents (30.8%) commented that they appreciated the simplicity of the programme and its principles, but a larger proportion (46.2%) reported feeling that the intervention was relatively rigid and did not leave much room for discussion or departure from the specific tasks. A proportion (30.8%) also commented that their child quickly chose the benign response without necessarily thinking about how they would genuinely think or feel in that situation, and it therefore became akin to a 'right' or 'wrong' exercise, which was reinforced by the feedback children were given on the outcome they had chosen. These parents highlighted that whilst their child was aware of the 'more helpful' way of thinking in hypothetical scenarios, this did not always seem to reflect or translate into real-life situations, and that the programme had perhaps had limited impact in this respect. Furthermore, some parents (30.8%) commented that sometimes the negative response might be the more realistic one, particularly for children who struggle with school, friendships or bullying. Parents therefore felt that the most beneficial aspects of the programme were in highlighting their child's social worries (30.8%), and making them more aware of asking their child about their thoughts and feelings in certain situations and opening up this communication between parent and child (38.5%). A proportion of parents (30.8%) commented that they would aim to continue discussing social worries and situations with their child following the programme. One parent additionally commented that it would be helpful to have

the programme incorporated into the school PHSE programme. Suggestions generated by children and parents regarding modifications to the intervention related to including more varied and engaging scenarios and questions, and different activities in order to break up the repetitive nature of the tasks or make them more realistic (e.g. games, quizzes, video, role-play).

Table 2.2. Participant feedback (Likert responses)

	Child		*Parent*	
	CBM-I (n=16)	*AC (n=14)*	*CBM-I (n=13)*	*AC (n=13)*
	Likert response (*n*, %)[a]			
Programme helpful	*1-2* (3, 18.7%) *3* (6, 37.5%) *4-5* (7, 43.8%)	*1-2* (1, 7.1%) *3* (6, 42.9%) *4-5* (7, 50.0%)	*0-3* (4, 30.8%) *4-6* (9, 69.2%) *7-10* (0)	*0-3* (4, 30.8%) *4-6* (8, 61.5%) *7-10* (1, 7.7%)
Programme enjoyable	*1-2* (4, 25.0%) *3* (2, 12.5%) *4-5* (10, 62.5%)	*1-2* (0) *3* (3, 21.4%) *4-5* (11, 78.6%)	*0-3* (4, 30.8%) *4-6* (8, 61.5%) *7-10* (1, 7.7%)	*0-3* (2, 15.4%) *4-6* (10, 76.9%) *7-10* (1, 7.7%)
Positive impact on child [b]	*1-2* (1, 6.2%) *3* (6, 37.5%) *4-5* (9, 56.3%)	*1-2* (0) *3* (5, 35.7%) *4-5* (9, 64.3%)	*1-2* (25, 64.1% *3* (8, 20.5%) *4-5* (6, 15.4%)	*1-2* (31, 79.5%) *3* (6, 15.4%) *4-5* (2, 5.1%)
Positive impact on parent [b]	N.A.		*1-2* (32, 82.1%) *3* (5, 12.8%) *4-5* (2, 5.1%)	*1-2* (30, 76.9%) *3* (7, 17.9%) *4-5* (2, 5.1%)
Positive impact on child-parent dyad [c]	N.A.		*1-2* (5, 19.2%) *3* (15, 57.8%) *4-5* (5, 19.2%) *M* (1, 3.8%)	*1-2* (14, 53.9%) *3* (5, 19.2%) *4-5* (7, 26.9%)
Programme right length (overall) [d]	N.A.		*0-3* (1, 7.7%) *4-6* (9, 69.2%) *7-10* (3, 23.1%)	*0-3* (0) *4-6* (12, 92.3%) *7-10* (0) *M* (1, 7.7%)
Programme right length (each day) [d]	N.A.		*0-3* (5, 38.5%) *4-6* (8, 61.5%) *7-10* (0)	*0* (2, 15.4%) *4-6* (10, 76.9%) *7-10* (0) *M* (1, 7.7%)
Meeting helpful	N.A.		*1-2* (9, 34.6%) *3* (1, 3.9%) *4-5* (7, 26.9%) *N.A.* (9, 34.6%)	
Questionnaires (mind completing) [e]	N.A.		*1-2* (24, 92.4%) *3* (1, 3.8%) *4-5* (1, 3.8%)	
Questionnaires (interesting/enjoyable)	*1-2* (2, 6.7%) *3* (13, 43.3%) *4-5* (15, 50.0%)		*1-2* (14, 53.8%) *3* (5, 19.2%) *4-5* (6, 23.2%) *M* (1, 3.8%)	

[a] Higher scores = more positive response (unless otherwise indicated); [b] Parent frequencies summed over three questions (see Appendix 2.12); [c] Parent frequencies summed over two questions (see Appendix 2.12); [d] 5 = 'right length', <5 = 'should have been shorter, >5 = 'should have been longer'; [e] Reverse-scored (lower response = more positive); M=Missing

Control intervention

Quantitative feedback

Table 2.2 shows that nearly all children reported finding the AC intervention moderately to very helpful (92.9%) and enjoyable (100%). The majority of parents also reported finding it moderately to very helpful (69.2%) and enjoyable (84.6%). A proportion of children (64.3%) indicated that they felt the programme had had a positive impact on their social worries, and as above, some parents reported that the programme had had a beneficial impact on their understanding of their child's thoughts, feelings and behaviour in social situations, as well as their communication with their child. Parents' reports indicated that they felt the programme had been the right length (overall and each day).

Free-text response feedback

Many children (78.6%) and parents (53.8%) reported that they had enjoyed spending time with each other, discussing social situations and reading the booklet as part of the study. A few parents (23.1%) commented that the AC programme had been beneficial in encouraging them to talk more with their child, and in facilitating discussions about social situations and concerns. A proportion of parents (53.8%) felt that phrasing the AC questions as though there were 'correct' and 'incorrect' answers felt confusing, as children tended to focus on whether or not they had chosen the 'right' outcome rather than on imagining the social scenario. Furthermore, a couple of parents (15.3%) additionally reported that their child felt disappointed at choosing the 'wrong' answer, even though it was set up as a guessing game with no 'correct' responses. Suggestions from parents for modifications to the AC intervention therefore related to structuring or phrasing the scenarios differently so that they seemed more coherent, and making them more engaging and playful.

School feedback

Feedback on the study from schools was very positive. Schools reported that they had enjoyed being part of the project and found it interesting, and that the research felt relevant and important. Similarly, schools reported that the study had been easy to organise and had fitted in well with school activities. One school highlighted that it was particularly beneficial to have a researcher come in to talk to pupils about social worries and conduct the screening questionnaire, and that it was helpful to be made more aware of pupils who may feel socially anxious. Another school highlighted that they felt pupils had enjoyed and benefitted from the sessions with the researcher. Finally, one school commented that receiving feedback on the

results of the study was important to them, in order for this to inform future planning regarding pupil welfare and wellbeing.

Preliminary evaluation of outcomes

Analyses were conducted on 30 child participants (16 CBM-I and 14 control) and 26 parent participants (12 CBM-I (13 for perceived child interpretations), and 13 AC). Baseline and follow-up mean scores and standard deviations for the child and parent outcome measures are given in Table 2.3 for each intervention group, along with mean post-treatment between-group differences, effect sizes and associated confidence intervals.

Child interpretations

Table 2.3 shows that there was an increase in benign interpretations in both groups at post-intervention, whereas for negative interpretations there was a small reduction in the CBM-I group, but little change in the AC group. Adjusted mean between-group differences favoured the CBM-I group. However, ANCOVAs showed no significant differences between the CBM-I and AC groups in benign or negative interpretations at post-intervention, reflecting a large (0.63, 95% CI: -0.28 to 1.54) and medium (-0.38, 95% CI: -0.95 to 0.18) effect size, respectively.

Both groups showed a small reduction in frequency, and increase in threshold, of threat interpretations at post-intervention. Adjusted mean between-group differences did not favour the CBM-I group. Analyses revealed no significant between-group differences in frequency or threshold of threat interpretations at post-intervention, which corresponded to a medium (0.46, 95% CI: -0.14 to 1.07) and large (-0.52, 95% CI: -1.13 to 0.08) effect size, respectively.

Child anxiety symptoms

Descriptive statistics showed that there was a reduction in SA symptoms in both groups at post-intervention, and further reduction in both groups at follow-up. Adjusted mean between-group differences favoured the CBM-I group at post-intervention, but the AC group at follow-up. ANCOVAs showed no significant between-group differences in SA symptoms at post-intervention or follow-up, corresponding to small effect sizes (-0.17, 95% CI: -0.84 to 0.49; and 0.11, 95% CI: -0.62 to 0.84, respectively). There was little change in GA symptoms in either group at post-intervention, and although adjusted mean between-group differences marginally favoured the CBM-I group, analysis showed no significant difference between groups, reflecting a medium effect size (-0.38, 95% CI: -0.79 to 0.02).

Table 2.3. Preliminary outcome results

			Pre-intervention		Post-intervention		Follow-up				
	Measure	*Condition*	*Mean (S.D.)*	*n*	*Mean (S.D.)*	*n*	*Mean (S.D.)*	*n*	*Between-group difference * Mean (95% CI)*	*p*	*Effect size Cohen's d (95% CI)*
Child outcomes	*Negative interpretations*	CBM-I	22.9 (8.8)	16	19.5 (8.2)	16	N.A.		-3.21 (-7.90 to 1.48)	0.17	-0.38 (-0.95 to 0.18)
		AC	19.0 (7.8)	15	20.3 (8.2)	14					
	Benign interpretations	CBM-I	26.4 (5.5)	16	30.8 (7.0)	16	N.A.		3.54 (-1.60 to 8.68)	0.17	0.63 (-0.28 to 1.54)
		AC	23.9 (5.8)	15	27.1 (6.0)	14					
	Threat interpretation frequency	CBM-I	17.1 (7.8)	16	16.4 (8.8)	16	N.A.		2.97 (-0.90 to 6.84)	0.13	0.46 (-0.14 to 1.07)
		AC	18.4 (4.3)	15	15.0 (5.8)	14					
	Threat interpretation threshold	CBM-I	19.2 (9.4)	16	20.5 (10.3)	16	N.A.		-4.02 (-8.68 to 0.65)	0.09	-0.52 (-1.13 to 0.08)
		AC	16.1 (5.0)	15	20.9 (7.3)	14					
	Social anxiety	CBM-I	52.0 (13.3)	16	47.7 (14.6)	16	45.4 (13.8)	16	-1.91 (-9.26 to 5.44) (post-treatment) 1.25 (-6.84 to 9.34) (follow-up)	0.60 0.75	-0.17 (-0.84 to 0.49) 0.11 (-0.62 to 0.84)
		AC	49.7 (10.8)	15	48.1 (12.2)	14	43.0 (13.4)	14			
	General anxiety	CBM-I	7.6 (4.1)	16	7.1 (4.2)	16	N.A.		-1.23 (-2.63 to 0.07)	0.06	-0.38 (-0.79 to 0.02)
		AC	6.6 (2.1)	15	7.5 (2.4)	14					
Parent outcomes	*Negative interpretations (self)*	CBM-I	16.2 (5.9)	16	12.8 (6.2)	12	N.A.		-2.43 (-5.95 to 1.09)	0.17	-0.29 (-0.71 to 0.13)
		AC	13.0 (10.2)	15	11.9 (8.7)	13					
	Benign interpretations (self)	CBM-I	24.8 (6.1)	16	25.3 (5.6)	12	N.A.		2.45 (-1.90 to 6.80)	0.26	0.40 (-0.31 to 1.12)
		AC	25.7 (6.0)	15	24.5 (7.7)	13					
	Negative interpretations (child)	CBM-I	33.0 (9.9)	16	25.0 (12.5)	13	N.A.		-5.54 (-13.61 to 2.53)	0.17	-0.62 (-1.53 to 0.28)
		AC	28.7 (7.8)	15	28.6 (6.0)	13					
	Benign interpretations (child)	CBM-I	34.8 (9.1)	16	36.3 (11.7)	13	N.A.		3.01 (-4.31 to 10.32)	0.40	0.39 (-0.56 to 1.33)
		AC	39.8 (6.1)	15	35.7 (7.5)	13					

	Social anxiety	CBM-I	15.9 (4.6)	16	16.8 (6.8)	12	N.A.	4.42 (1.19 to 7.66)	0.01	0.55 (0.15 to 0.95)
		AC	14.2 (10.3)	15	11.3 (10.6)	13				
	General anxiety	CBM-I	6.6 (6.5)	16	7.3 (6.1)	12	N.A.	2.25 (-0.11 to 4.61)	0.06	0.45 (-0.02 to 0.93)
		AC	4.5 (2.9)	15	3.1 (2.8)	13				

* Difference in between-group post-treatment score, adjusting for pre-treatment score (completers).

Parental interpretations

Table 2.3 shows that there was a decrease in parental negative interpretations in both groups at post-intervention, but little change in benign interpretations. Adjusted mean between-group differences favoured the CBM-I group. ANCOVAs showed no significant between-group differences in negative or benign interpretations at post-intervention, reflecting a small (-0.29, 95% CI: -0.71 to 0.13) and medium (0.40, 95% CI: -0.31 to 1.12) effect size, respectively). With regard to parents' ratings of perceived child negative interpretations, there was a decrease in the CBM-I group, but no change in the AC group at post-intervention, whereas for perceived child benign interpretations, there was a very small increase in scores in the CBM-I group and a small reduction in the AC group. Again, adjusted mean between-group differences favoured the CBM-I group, but analyses revealed no significant between-group differences in perceived child negative or benign interpretations at post-intervention, corresponding to a large (-0.62, 95% CI: -1.53 to 0.28) and medium (0.39, 95% CI: -0.56 to 1.33) effect size, respectively.

Parental anxiety symptoms

There were small increases in SA and GA symptom scores in the CBM-I group at post-intervention, whereas there was a decrease in parental SA and GA symptoms at post-intervention in the AC group. Adjusted mean between-group differences favoured the AC group. Analysis showed a significant difference in SA scores at post-intervention favouring the AC group, which reflected a large effect size (0.55, 95% CI: 0.15 to 0.95). There was no significant between-group difference in GA scores at post-intervention, corresponding to a medium effect size (0.45, 95% CI: -0.02 to 0.93).

Discussion

The current study aimed to investigate the feasibility, acceptability and preliminary outcomes of a parent-delivered CBM-I intervention for SA in children aged 7-10 years. The intervention was designed to modify maladaptive interpretation biases about ambiguous social situations, and thereby potentially to reduce child SA symptoms. By involving parents in the delivery of the intervention, the study capitalised on the large body of research suggesting that parental anxiety, cognitions and behaviour play a role in the development and maintenance of children's maladaptive cognitions, and investigated potential change in parental interpretations and SA symptoms as a secondary outcome. The CBM-I intervention was compared to an AC intervention in a feasibility RCT. In order to overcome some of the limitations of previous trials of CBM-I interventions with children (see Cristea et al., 2015b; Lau, 2015), the current study used a sample of children selected for raised SA levels, included multiple training sessions, and

compared CBM-I to an AC intervention designed to control for exposure to hypothetical social situations, parent-child interaction, and demand characteristics. Findings suggested that the trial methods and interventions were feasible to deliver, and were acceptable to children, parents and schools. However, although preliminary examination of interpretation biases and SA symptoms generally suggested small improvements at post-intervention in the CBM-I condition, particular benefits of the CBM-I intervention over the AC condition were not indicated.

Summary of main findings

Feasibility

Recruitment and retention rates suggested that the trial was feasible to deliver. Opt-out rates for the screening measure were low, resulting in over 90% of eligible children completing screening. Consent rates for participants entering the main study (15% of those invited) were a little lower than expected based on some previous intervention studies in school populations (e.g. Bernstein et al., 2005; Miller et al., 2011; see also Wolfenden et al., 2009), although not inconsistent with others using similar procedures (e.g. Gillham et al., 2007). However, retention rates following consent were high, with only one non-completer, and almost 90% parent-child dyads completing CBM-I training tasks on at least seven of the nine allotted days (over 80% in the AC condition). Over 95% children and over 80% parents from the baseline sample completed post-intervention and follow-up outcome measures. These retention rates are high, consistent with other studies in school populations (e.g. Gillham et al., 2007; Miller et al., 2011; Stallard et al., 2005). Interestingly, in the current study, over 30% children scored above the 10% cut-offs based on norms from a large sample of Dutch school children (Muris et al., 2000c). This may reflect the fact that this norm sample is now somewhat outdated, and is not based on a UK sample. Revised cut-off scores, based on updated, UK norms, may therefore be necessary for future studies wishing to select a more extreme sample. Nevertheless, mean scores on the SCAS-SP and SASC-R measures for participating children were comparable to those observed in high-risk and clinical samples (e.g. Epkins, 2002; Ginsburg et al., 1998). These results suggest that a larger trial is likely to be feasible to deliver.

Acceptability

Feedback from children, parents and schools was positive and suggested that the data collection methods and interventions were acceptable. Children generally reported finding the CBM-I intervention helpful, although parents reported more limited benefits of the programme. Children and parents reported that one of the most valuable aspects of the programme had

been spending time together discussing social situations, and thoughts and feelings relating to them. Some parents additionally commented that it was beneficial to have been made more aware of their child's social anxiety, and that the intervention had facilitated discussion between children and parents about potential social worries, which they would aim to continue beyond the duration of the programme. Furthermore, children and parents reported finding both the CBM-I and AC interventions enjoyable. However, consistent with previous research on CBM-I interventions with children and young people, a proportion of children reported experiencing some disengagement with the scenarios due to their repetitive nature (Lau, 2015). Both children and parents had recommendations for modifications to the intervention to further enhance engagement. These related to promoting more parent-child discussion around the scenarios, and making the intervention more generalisable to real-life situations. Positive feedback was received from schools, who reported that they had enjoyed participating in the project, and had found it interesting, beneficial and worthwhile. Overall, feedback on the current project was therefore encouraging, and suggested that delivery of a larger RCT would be acceptable to participants and schools, particularly following additional modifications to the interventions based on the current feedback.

Preliminary outcomes

The primary purpose of the study was to assess feasibility and acceptability, rather than to test hypotheses regarding clinical outcomes. However, outcome scores were examined in order to generate data to inform the planning of a larger trial, and to assess the preliminary utility of parent-delivered CBM-I as an intervention for emerging SA symptoms in children. Investigation of mean scores on a range of measures assessing child social interpretation biases, SA and GA symptoms, showed change in the expected direction following the CBM-I intervention. However, preliminary between-group analyses at post-intervention suggested no particular benefit of the CBM-I over the AC intervention, with effect sizes ranging from small to large. Similar results were found regarding change in parental outcome scores, which was examined as a secondary outcome. Mean scores in the CBM-I group indicated reductions in negative, and increases in benign, interpretations about ambiguous social scenarios (relating both to the parent's own and perceived child interpretations) at post-intervention, although no reduction in SA and GA symptoms. Again, although effect sizes were generally medium, analyses of post-intervention scores similarly did not suggest an advantage of CBM-I over AC. These results therefore suggest that the CBM-I intervention may have benefits, but that these may be no greater than those offered by an AC intervention. However, these outcomes should of course be interpreted with great caution given the preliminary nature of these investigations.

Findings in relation to previous studies on CBM-I in children

Although examination of change in symptom scores was not the primary aim of the current study, a number of interesting observations can be made about the current findings in the context of the wider literature on the use of CBM-I interventions in children. First, the preliminary findings of this study are inconsistent with the results of the two previous studies that have trialled versions of the parent-delivered CBM-I intervention, which had similar sample sizes (Cox et al., 2016; Lau et al., 2013). Both of these prior studies found significant effects of the intervention on child interpretation biases compared to a control condition, and the earlier study additionally found significant reductions in SA symptoms relative to a test-retest control group (although reductions in SA symptoms were seen across all participants in the later study, which used an active control condition). Furthermore, the current results are also somewhat inconsistent with other studies using CBM-I methods with children, including for SA (Vassilopoulos et al., 2009; Vassilopoulos et al., 2012a; Vassilopoulos et al., 2012b), which have generally found strong effects on interpretation biases even when little or no change was seen in anxiety symptoms (see Cristea et al., 2015b). Despite conducting the current CBM-I intervention in children with raised SA levels, and over a longer training period, only small changes were seen in interpretations and anxiety symptoms, which were no greater than those seen in the AC group. One explanation for these findings is that dysfunctional cognitive biases may be more deeply entrenched in children with raised anxiety, and therefore less amenable to adaptation through short-term training. Children may therefore learn to 'successfully' complete the training tasks, but this may not translate into concrete changes in interpretational style (Cristea et al., 2015b; Lau, 2013). Indeed, a recent study trialling similar training methods to the current intervention (although not delivered by parents) in children with clinical SA diagnoses found that, although large effects of the intervention were seen on interpretation biases, change was no greater than in a test-retest control group (Orchard et al., 2017). However, Vassilopoulos et al (2009) found that the same CBM-I intervention reduced negative interpretations and SA symptoms in children with raised SA levels. An alternative explanation for these findings could be that, in children selected for raised SA levels, the negative outcome in the training scenarios may in fact be a realistic interpretation, given that many children with SA struggle with peer relationships, bullying and difficulties at school (Bernstein et al., 2008; Mazzone et al., 2007). Indeed, this is consistent with observations from some parents in the current study. The relatively simple CBM-I training tasks inevitably cannot capture the full complexity and dynamic nature of real-life social situations and interactions, and one way to advance CBM-I protocols may be to focus on training flexibility in interpretations (rather than training benign over negative interpretations). This may include training external attributions of negative

interpretations over internal attributions (e.g. 'they are not nice children' over 'I am not likeable').

The finding that there was also positive change in interpretation biases and SA symptoms in the AC condition is interesting, and suggests that simple exposure to hypothetical social situations, and/or regular parent-child interaction, may alone potentially be actively anxiety-reducing. Parents in both groups reported that participating in the study had improved their insight into their child's worries about social situations, and facilitated more parent-child communication in this regard. This may have promoted greater support and empathy from parents, which is likely to help to validate children's worries and thereby reduce anxiety (McLeod et al., 2007; Wood et al., 2003). It is also worth commenting that demand characteristics or regression towards the mean may have contributed to the observed reductions in mean SA symptoms in both groups over time, given that face-to-face assessments were conducted at three time-points with the same researcher. Finally, some recent studies have cast an aspect of doubt over the assumed causal role of social interpretation biases in child SA (e.g. Creswell et al., 2014; Muris et al., 2000a; Orchard et al., 2017). Although the current outcomes are only preliminary, the observed pattern of change in scores across both groups potentially raises further questions about the extent to which these maladaptive interpretations may apply in child SA, and therefore whether CBM-I is likely to be a useful intervention (Lau, 2013).

Limitations of the current study

The primary aims of the current study were to assess the feasibility and acceptability of the trial methods and interventions. To this end, the sample size was small, and was not designed to achieve statistical power, and interpretation of preliminary data on the nature and size of effects and group differences should therefore be undertaken with extreme caution. However, the assessment of child interpretations alongside SA symptoms at later follow-up may have provided further insight into the potential utility of CBM-I in modifying cognitive biases. More detailed qualitative work with participants and schools, such as interviews or focus groups, may provide additional valuable feedback and suggestions for modifications to the intervention and trial methods to further enhance acceptability. This may be particularly helpful for planning recruitment strategies for a larger trial, given the relatively low recruitment rates to the current study, as well as for further enhancing engagement in the intervention. It is also important to highlight that participants in the current study identified predominantly as white in ethnicity, and reflected a sample with relatively high socioeconomic status, and are therefore unlikely to be fully representative of the study population.

With regard to the CBM-I training methods, there are a few factors which could potentially be taken into account in future studies. As in other recent studies (Cox et al., 2016; Lau et al., 2013; Orchard et al., 2017), the current study followed procedures used successfully by Vassilopoulos et al (2009), and as such used a passive training procedure with an imagery component (whereby children were asked to choose between two given outcomes, and then imagine the benign outcome). However, in a later study, Vassilopoulos et al (2012a) found greater effects of the intervention when children were asked to process verbal meaning than imagery (although this is inconsistent with findings in the adult literature (e.g. see Holmes & Mathews, 2010). This procedure could therefore be trialled in future studies, and may have benefits, especially if socially anxious children are biased towards generating negative self-images in social situations, as has been suggested by the adult literature (e.g. Hackmann et al., 2000). Furthermore, previous research has suggested that promoting the *active* generation of interpretations and meaning may enhance training effects (e.g. Mathews & Mackintosh, 2000). In the context of the current intervention, this may additionally promote greater parent-child discussion about scenarios, which may further enhance the validity and generalisability of the intervention. Finally, future studies may benefit from conducting further detailed work to validate the intervention scenarios. This may be particularly important in order to establish that the benign accounts do reliably train a benign interpretative style over negative self-evaluation in children. In line with some other CBM-I studies (see Cristea et al., 2015b), the current training procedures could also be extended to include positive outcomes in addition to neutral outcomes, in order to promote the training of a positive as well as a merely neutral interpretative style. This may have the potential to enhance both the efficacy and the acceptability of the CBM-I training.

Clinical implications and future directions

The current study adds to a growing body of literature investigating the use of CBM-I interventions for social anxiety in children. Results suggested that the study methods and interventions were feasible and acceptable, with relatively high rates of retention and satisfaction, especially amongst children. Preliminary analysis of post-intervention outcome scores suggested small positive changes in interpretations and SA symptoms in the CBM-I condition. However, there were no apparent benefits of CBM-I over an AC intervention which also involved exposure to hypothetical social scenarios and parent-child interaction (but no active modification of biases). These results suggest that a larger trial would likely be feasible and acceptable to deliver, and may be warranted in order to assess the utility of using CBM-I to prevent or treat early emerging SA symptoms in primary school children. A future trial should take into account modifications to the intervention suggested by the current research. If shown to be effective in reducing early SA symptoms, the current CBM-I training programme could form

a beneficial part of school mental health and welfare initiatives, and could be delivered by parents or school staff. It may potentially also form a helpful low-intensity adjunct to traditional CBT interventions, particularly where parental involvement may be beneficial. However, uncertainty still remains about whether interpretation biases play a causal role in SA in children, and findings from both this and previous CBM-I studies targeting these biases have been somewhat inconsistent. Future studies are therefore needed to investigate and clarify further the nature of this association, and thereby to establish whether CBM-I interventions may offer benefits for children.

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Appendices

Appendix 2.1. Institutional ethical approval

Miss Esther Wilkinson
De Crespigny Park
London SE5 8AF
22 December 2015

Dear Esther

Reference Number: HR-15/16-2003

Study Title: Reducing children's social anxiety symptoms through a novel parent-administered cognitive bias modification intervention: a feasibility randomised controlled trial.

Review Outcome: Approval with Provisos

Thank you for submitting your application for the above project. I am pleased to inform you that your application has now be approved with the proviso specified below:

1. Opt-out sheet: Clarify what will happen to the screening data, though. While this is not sensitive, it is still personal data and the parents should know how and when this will be destroyed.

All changes must be made before data collection commences. However, the Committee does not need to see evidence of these changes, however supervisors are responsible for ensuring that students implement any requested changes before data collection commences.

Please ensure that you follow all relevant guidance as laid out in the King's College London Guidelines on Good Practice in Academic Research (http://www.kcl.ac.uk/college/policyzone/index.php?id=247).

For your information, ethical approval is granted until 22nd December 2018. If you need approval beyond this point, you will need to apply for an extension at least two weeks before this. You will be required to explain the reasons for the extension. However, you will not need to submit a full re-application unless the protocol has changed. If you have been granted approval for only 12 months, you will not be sent a reminder when it is due to lapse.

Ethical approval is required to cover the data-collection phase of the study. This will be until the date specified in this letter. However, you do not need ethical approval to cover subsequent data analysis or publication of the results.

For secondary data-analysis, ethical approval is applicable to the data that is sensitive or identifies participants. Approval is applicable to period in which such data is accessed or evaluated.

Please note you are required to adhere to all research data/records management and storage procedures agreed to as part of your application. This will be expected even after the completion of the study.

If you do not start the project within three months of this letter please contact the Research Ethics Office.

Please note that you will be required to obtain approval to modify the study. This also encompasses extensions to periods of approval. Please refer to the URL below for further guidance about the process:

http://www.kcl.ac.uk/innovation/research/support/ethics/applications/modifications.aspx

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.

If you have any query about any aspect of this ethical approval, please contact your panel/ committee administrator in the first instance (http://www.kcl.ac.uk/innovation/research/support/ethics/contact.aspx)

We wish you every success with this work.

Yours sincerely,

Senior Research Ethics Officer

For and on behalf of

Chair

Psychiatry, Nursing and Midwifery Research Ethics Subcommittee

Cc: Jennifer Lau

Appendix 2.2. School information sheet

A project on children's thinking about social situations

Information Sheet for Schools

We are running a research study which aims to help children to think about social situations. The study is being run by researchers at King's College London. We would be delighted if you would be willing to be part of the project.

What is the study for?

In this study we are looking at a programme that aims to help children to think about, understand and respond to social situations. Worries about social situations are common in primary school children and can make children feel anxious. Our programme uses a simple method which supports parents and children to think together about common social situations that children might face. The research project will contribute towards a thesis submitted as part of a Doctorate in Clinical Psychology.

Why has our school been invited to be involved?

We are inviting primary schools in London to be part of the project. We are looking for 7-10 year old (Years 3-5) children to take part in the project.

What will we have to do?

If you agree for your school to be involved in the project, we would like to send a letter to parents/caregivers of all Year 3, 4 and 5 children to tell them a bit about the study and to ask permission for their child to fill out a short questionnaire at school. A researcher would then visit the school to speak to children about the project and to do the questionnaire with them. The questionnaire involves 6 questions about children's experiences of social situations.

Based on their responses, we would then invite a smaller number of children (and their parents/caregivers) to take part in the full study. This involves parents doing some short tasks with their child each weekday evening for 2 weeks and would not interfere with school time. The tasks involve parents reading and discussing some social situations with their child.

At the beginning and end of the 2 weeks, we would ideally like to hold a short study meeting at your school for parents and children to attend. This will give us a chance to tell them a bit more about the project, answer any questions they have and do a few short questionnaires with them. We would also like to ask you to fill out a brief feedback questionnaire about your experience as a school of being part of the project.

What are the possible benefits and drawbacks of taking part?

We are in the early stages of this research and therefore we cannot say with certainty that taking part will be of benefit to children. However, the results of the study will give us a better idea of whether the programme is helpful and what works best for parents, children and schools. Families will receive a £10 voucher for taking part, and we would like to offer you £30 in book vouchers for your school library.

The disadvantages of taking part are likely to be small. We would ask you to put aside a small amount of time for a researcher to come to speak to pupils about the study and do the questionnaire, and also to facilitate a couple of study meetings for parents and children. These could be before or after school hours, but we would arrange with you the most convenient time to hold these. We will also ask you to fill out a brief questionnaire about taking part.

Who has reviewed the study?

This study has been reviewed and given favourable opinion by the Psychiatry, Nursing and Midwifery Research Ethics Sub-Committee at King's College London (reference number: HR-15/16-2003).

What happens next?

If you are willing for your school to be part of the project, the next step is for us to arrange for letters to be sent out to parents and arrange a time to come to speak to pupils.

If you have any questions now or at any point during the study, please speak to one of the researchers in person or contact them using the details below.

Thank you for taking the time to read this information and for your interest in our research.

Esther Wilkinson

Doctorate in Clinical Psychology

Institute of Psychiatry, Psychology and Neuroscience

Addiction Sciences Building

4 Windsor Walk

London

SE5 8AF

Email: esther.wilkinson@kcl.ac.uk

Tel: 07505 763042

Appendix 2.3. Screening opt-out letter

Esther Wilkinson
Doctorate in Clinical Psychology, IoPPN
Addiction Sciences Building
4 Windsor Walk
London
SE5 8AF
Email: esther.wilkinson@kcl.ac.uk
Tel: 07505 763042

Dear parent,

We are a group of researchers conducting a study on children's thinking about social situations. This is part of a postgraduate doctoral project at King's College London. We are looking for 7-10-year-old children and their parents/caregivers to take part in the study.

As part of this we will be visiting your child's class to tell them a bit about the project and to ask them to fill out a short questionnaire. This involves 6 questions about their experience of social situations. These questions ask about shyness and whether children feel worried or anxious when around other people (e.g., when meeting someone for the first time). If you ***do not*** wish for your child to fill out this questionnaire for us we would be grateful if you could let us know by returning the attached reply slip to your child's class teacher.

Based on children's responses to this questionnaire we will then invite a smaller number of children and parents to participate in the study. Full information about the project would be given to parents and children at this point and we would ask for your consent to take part. You and your child will be free to withdraw from the study at any point. In accordance with King's College London policy, data collected as part of the study will be kept securely for 7 years, after which time it will be destroyed.

If you would like more information at this stage, please do not hesitate to contact the study team using the details above.

Thank you for reading this letter and for your interest in our project.

With best wishes,

The study team

……

I *do not* wish for my child to complete the questionnaire about their experience of social situations.

…….	…….	……
CHILD'S NAME	PARENT'S SIGNATURE	DATE

Appendix 2.4. Parent information sheet

A project on children's thinking about social situations

Participant Information Sheet for Parents

You are being invited to take part in a research study which aims to encourage children to think about social situations. The study is being run as part of a postgraduate doctoral project at King's College London.

What is the study for?

In this study we are looking at a programme that aims to help children to think about, understand and respond to social situations. Worries about social situations are common in primary school children and can make children feel shy, cautious or anxious. Our programme uses a simple method which supports parents and children to think together about common social situations that children might face. As we are still in the fairly early stages of this research, we want to find out not only whether the programme is helpful but also what parents and children think of the programme. This will help us to work out what works best for children and parents. The research project will contribute towards a thesis submitted as part of a Doctorate in Clinical Psychology.

Why have we been invited to take part?

We are inviting you to take part because your child falls in the age range for our study (7-10 years), and the questionnaire your child filled out for us suggested that s/he may have some worries about social situations and may therefore benefit from the programme.

Do we have to take part?

Participation in the study is entirely voluntary, so it is up to you to decide whether or not you and your child would like to take part. You may also wish to speak to others (e.g., family members, your child's teacher) about taking part. Before you decide it is important that you know what the study is for and what it would involve. We will describe the study and go through this information sheet, which is for you to keep. If you have any questions or concerns you are welcome to discuss them with one of the research team. If you decide to take part you will be asked to sign a consent form. If you do decide to take part and later change your mind, you are free to withdraw from the study at any time up until 30th April 2017, without giving a reason. Whether or not you take part will not in any way affect the healthcare or education provision you or your child receives.

What will I have to do?

If you and your child wish to take part we will ask you both to fill out a few short questionnaires, which will take approximately 10-15 minutes to complete. Your child will also do a short task with a researcher at school, which involves us reading some short stories about social situations to your child and asking them what they think about them. You and your child will then be randomly allocated to one of two groups, whereby participants in the two groups will do slightly different versions of the programme. Both involve similar activities and a similar time commitment. This is so we can work out which might work best. The researchers will give you instructions about completing the programme, which will involve you doing some short tasks with your child each weekday evening for 2 weeks. The activities involve you reading and discussing some social situations with your child and are designed to be interesting and enjoyable. This will take you approximately 15 minutes per evening. At the end of the two weeks, we'll ask you both to do some short questionnaires again, and then two weeks after that we'll ask just your child to do one more. You will be given a £10 voucher for completing the programme in recognition of the time and effort you put into the study. Your child's school will also receive some book vouchers.

What are the possible benefits of taking part?

We are in the early stages of this research and therefore we cannot say with certainty that taking part will be of benefit to you. However, by taking part you will help us to work out how best we can support children and parents.

What are the possible disadvantages and risks of taking part?

The disadvantages and risks of taking part are likely to be small. You would need to come to a couple of short study meetings at your child's school, although this is not essential (these will be arranged at a convenient time for parents), do the questionnaires for us (approximately 10-15 minutes) and put aside time to do the programme tasks with your child each weekday evening for two weeks (approximately 15 minutes). If you were to feel uncomfortable or concerned for any reason at any time during the study, you would of course be able to contact one of the researchers about this.

Will my taking part in the study be kept confidential?

We will keep all information in the strictest confidence. Only members of the research team will have access to your information. We will give you a unique 'participant number' so that your information is anonymised and your name and contact details are not stored with any other information from the study. For the duration of the project, the data will be stored in locked

filing cabinets at the Institute of Psychiatry, Psychology and Neuroscience at King's College London.

What will happen to my information?

All of your information will be stored securely and will only be accessible by members of the research team. In accordance with King's College London policy we will keep your information securely for 7 years after the study has finished, after which time it will be destroyed.

If you give us permission to do so we may use some specific quotes from your feedback in the project write-up and/or research presentations. Quotes would be anonymised and your personal details would not be disclosed.

What will happen to the results of the study?

The information and feedback gained from this study will be analysed and written up as part of a thesis for a Doctorate in Clinical Psychology. We will publish the results of the current study in scientific journals and may present them at conferences. All information will be anonymised and you will not be identifiable in the results or publications. We will send all participants a summary of our findings at the end of the study. In addition, the results of this study may be used to design a larger study of the programme, to test further how helpful and beneficial it is to children and parents.

How is the project being funded?

This research is a postgraduate doctoral piece of research that is not being funded.

Who has reviewed the study?

All research is looked at by an independent group of people, called a Research Ethics Committee, in order to protect your wellbeing, rights and dignity. This study has been reviewed and given favourable opinion by the Psychiatry, Nursing and Midwifery Research Ethics Sub-Committee at King's College London (reference number: HR-15/16-2003).

If this study harms you in any way, or if you have any concerns about any aspect of the way in which you have been treated during the course of this study, then you should contact Dr Jennifer Lau, who will do her best to answer your queries:

Dr Jennifer Lau
Department of Psychology
Institute of Psychiatry, Psychology and Neuroscience
De Crespigny Park
London SE5 8AF

jennifer.lau@kcl.ac.uk

020 7848 0678

In the unlikely event that something does go wrong and you are harmed during the research then you may have the grounds for legal action for compensation against King's College London but you may have to pay your legal costs. King's College London maintains adequate insurance to cover any liabilities arising from the study.

What happens next?

If you and your child would like to take part, the researcher will give you a consent form for you to complete and return to the researcher. S/he will then arrange for you to do the questionnaires.

If you have any questions now or at any point during the study, please speak to one of the researchers in person or contact them using the details below.

What should I do if I am worried about my child's anxiety?

If you are worried about your child's anxiety or mental health you are welcome to talk to one of us and we can direct you to appropriate support. There are some helpful resources for parents and children on the internet at www.anxietyuk.org.uk and www.youngminds.co.uk. If you are very concerned you should talk to your child's GP.

Thank you for taking the time to read this information and for your interest in our research.

Esther Wilkinson

Doctorate in Clinical Psychology

Institute of Psychiatry, Psychology and Neuroscience

Addiction Sciences Building

4 Windsor Walk

London

SE5 8AF

Email: esther.wilkinson@kcl.ac.uk

Tel: 07505 763042

Appendix 2.5. Child information sheet

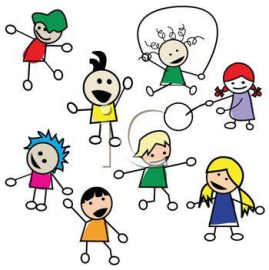
A Research Project

What is this sheet about?

This sheet tells you a bit about a research project we are doing. The project is on children's thinking about times when they meet, talk to and spend time with other people. We are inviting you to take part in this project!

Why are we doing the project?

We have designed a programme that helps children to think about times when they meet, talk to and spend time with other people (both children and adults). Some children may feel worried about this. Our programme tries to help children to think through these situations and different ways of responding to them. We would like you to try it out to see what you think. This will help us to find out whether it is useful or not.



Do I have to take part?

It is up to you and your parent(s) to decide whether you would like to take part. We have given them some information about the project too. You could also speak to your teacher about it. If you don't want to take part, that is fine.

What will I have to do?

If you take part, we'll ask you to fill out some questions for us and do a short task with one of us at your school, where we'll read you some short stories and ask you what you think about them. Then for 2 weeks you and one of your parents will spend some time each evening looking through our booklet and thinking about some different times when you are with other people. We hope this will be quite fun and something nice to do with your parent each day. At the end of the

2 weeks we'll ask you to do a few more questions for us at school, and then the same 2 weeks after that too. Then that's it!

Will anyone else be involved?

The only people involved will be the programme team, you and your parent. Your teacher will also know that you're doing the programme. No-one will see any of the information you give us. It's top secret!

What happens next?

If you and your parent would like to do the programme, we'll ask you to fill out a form to say you're happy to take part. Then you can get on with the questions and the programme!

If you have any questions at any point, you, your parent or your teacher can get in touch with one of us.

Thank you for reading this sheet and for being interested in our project!

Appendix 2.6. Consent form for parents

A project on children's thinking about social situations

Consent Form for Parents

Thank you for considering taking part in this research. The researcher must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

Please initial box:

I confirm that I have read and understood the information sheet (version 1.4 dated 13-May-16) for the above study. I have had the opportunity to consider the information and ask questions, which have been answered satisfactorily. ☐

I understand that participation in the study is voluntary and we are free to withdraw at any time, without having to give a reason and without it affecting my or my child's education or legal rights. ☐

I consent to the processing of my/my child's personal information for the purposes explained to me. I understand that such information will be handled in accordance with the terms of the UK Data Protection Act 1998. ☐

I understand that my/my child's information may be subject to review by responsible individuals from the College for monitoring and audit purposes. ☐

I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me or my child in any publications. ☐

I agree to the researchers using anonymised quotes in the project write-up, scientific papers or research presentations (you may say no to this and still take part in the study). ☐

I agree to be contacted in the future by King's College London researchers who would like to invite me or my child to participate in follow up studies to this project, or in future studies of a similar nature (you may say no to this and still take part in the study). ☐

I agree that the research team may use my data for potential future research within the 7 year period for which data is retained, and understand that any such use of identifiable data would be reviewed and approved by a research ethics committee. In such cases, as with this project, data would not be identifiable in any report (you may say no to this and still take part in the study). ☐

I agree, on behalf of myself and my child, to participate in this study. ☐

…….. …….. ……

PARTICIPANT NAME SIGNATURE DATE

…….

CHILD'S NAME

…….. …….. ……

RESEARCHER NAME SIGNATURE DATE

PARTICIPANT ID NUMBER: .....

Appendix 2.7. Assent form for children

A Research Project

Assent Form for Children

Thank you for thinking about taking part in our project. The researcher should have explained the project to you already. If you still have questions, make sure you ask the researcher before you agree to take part in the project by filling out this form. This form is for you to keep.

Please tick box:

I have read and understood the information sheet (version 1.3 dated 06-Dec-15) for this project. I have had the chance to ask questions, which have been answered. ☐

I understand that it is my choice to take part and I can change my mind at any time. ☐

I understand that my information will not be shared with anyone else. ☐

I agree to take part in this project. ☐

…… ……

YOUR NAME DATE

…… …… ……

RESEARCHER'S NAME SIGNATURE DATE

PARTICIPANT ID NUMBER: .....

Appendix 2.8. Screening questionnaire

First name: Surname:

This is not a test, there are no right or wrong answers. Please answer each question as honestly as you can.

Please put a circle around the word that shows how often each of these things happens to you.

I feel scared when I have to take a test	Never	Sometimes	Often	Always
I feel afraid if I have to use public toilets or bathrooms	Never	Sometimes	Often	Always
I feel afraid that I will make a fool of myself in front of people	Never	Sometimes	Often	Always
I worry that I will do badly at my school work	Never	Sometimes	Often	Always
I worry about what other people think of me	Never	Sometimes	Often	Always
I feel afraid if I have to talk in front of my class	Never	Sometimes	Often	Always

All done – thank you! ☺

This is not a test, there are no right or wrong answers. Please answer each item as honestly as you can.

Use these numbers to show HOW MUCH YOU FEEL something is true for you:

1 = Not at all

2 = Hardly ever

3 = Sometimes

4 = Most of the time

5 = All the time

Have a go at these sentences first. Ask for help if you feel stuck. How much does each describe how you feel?

a. I like summer holidays.	1	2	3	4	5
b. I like to eat spinach.	1	2	3	4	5

Now have a go at these ones:

1. I worry about doing something new in front of other children.	1	2	3	4	5
2. I like to play with other children.	1	2	3	4	5
3. I worry about being teased.	1	2	3	4	5
4. I feel shy around children I don't know.	1	2	3	4	5
5. I only talk to children I know really well.	1	2	3	4	5
6. I feel that other children talk about me behind my back.	1	2	3	4	5
7. I like to read.	1	2	3	4	5
8. I worry about what other children think of me.	1	2	3	4	5

Use these numbers to show HOW MUCH YOU FEEL something is true for you:

1 = Not at all

2 = Hardly ever

3 = Sometimes

4 = Most of the time

5 = All the time

9. I'm afraid that others will not like me.	1	2	3	4	5
10. I get nervous when I talk to children I don't know very well.	1	2	3	4	5
11. I like to play sports.	1	2	3	4	5
12. I worry about what others say about me.	1	2	3	4	5
13. I get nervous when I meet new children.	1	2	3	4	5
14. I worry that other children don't like me.	1	2	3	4	5
15. I'm quiet when I'm with a group of children.	1	2	3	4	5
16. I like to do things by myself.	1	2	3	4	5
17. I feel that other children make fun of me.	1	2	3	4	5
18. If I get into an argument with another child, I worry that he or she will not like me.	1	2	3	4	5
19. I'm afraid to invite other children to do things with me because they might say no.	1	2	3	4	5
20. I feel nervous when I'm around certain children.	1	2	3	4	5
21. I feel shy even with children I know well.	1	2	3	4	5
22. It's hard for me to ask other children to do things with me.	1	2	3	4	5

Great! Now have a go at the one on the next page.

Please put a circle around the word that shows how often each of these things happen to you.

I worry about things	Never	Sometimes	Often	Always
When I have a problem, I get a funny feeling in my stomach	Never	Sometimes	Often	Always
I feel afraid	Never	Sometimes	Often	Always
When I have a problem, my heart beats really fast	Never	Sometimes	Often	Always
I worry that something bad will happen to me	Never	Sometimes	Often	Always
When I have a problem, I feel shaky	Never	Sometimes	Often	Always

Well done! Now just one more to go on the next page.

Here are some different situations. Think about yourself and what you would do in each of these situations. Answer every question by putting a circle around the number of the scale that is most like what you would do.

1. During maths class, the teacher asks children to sit in pairs to solve an exercise. However, he makes you sit by yourself.

Think about why this happened to you. How likely are you to think that:

(a) There were no other children who could have sat with me.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

(b) Nobody wants to sit with me.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

2. You go to your classmate's house to play together. You ring the bell, but nobody opens the door.

Think about why this happened to you. How likely are you to think that:

(a) My classmate is not at home.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

(b) My classmate doesn't want to open the door because I'm boring.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

3. You invite your classmates to a party at home on your birthday. Some children, however, haven't yet told you if they will come.

Think about why this happened to you. How likely are you to think that:

(a) They will not come because they don't like me.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

(b) They don't know yet if they will be able to come.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

4. You see two of your classmates talking. When they see you, they stop talking.

Think about why this happened to you. How likely are you to think that:

(a) They were saying mean things about me.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

(b) They just finished their conversation.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

5. During the break, you see a group of children playing a game. You approach the children, but they don't ask you to play with them.

Think about why this happened to you. How likely are you to think that:

(a) The teams are already decided and there is no room for another child to play.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

(b) They don't want to play with me.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

6. You encounter a group of children on the street. As you stop to talk to them, one of the children leaves.

Think about why this happened to you. How likely are you to think that:

(a) The child leaves because he doesn't like me.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

(b) The child is leaving because he had somewhere to go.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

7. You ask a classmate to help you with a group project for school and he says no.

Think about why this happened to you. How likely are you to think that:

(a) He doesn't want us to work together.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

(b) He has found another classmate to help him with the project.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

8. Your classmates are looking to find a place to go on a trip, but they don't ask what you think.

Think about why this happened to you. How likely are you to think that:

(a) They know where the best places are.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

(b) They do not think I will have any good ideas.

I would not think that at all		I would think that a little bit		I would definitely think that
1	2	3	4	5

Brilliant – all done! Thank you ☺

Threat Perception Stories

In a moment, I am going to read you a number of brief stories. Some stories are scary: This means that these stories will have a bad end. Some stories are not scary: This means that the stories will have a good end. You have to try to guess as quickly as possible whether the story that I read is a scary story, which will have a bad end, or a non-scary story, which will have a good end. I will read you each story sentence by sentence, and after each sentence I will ask you whether you think that the story is scary or non-scary. Once you have told me that you think the story will be scary, you still may change your mind after the next sentence.

After reading each sentence, ask: "What do you think? Is this going to be a scary or a non-scary story?"

Story 1	**Scary**	**Non-Scary**
1. Next week is your birthday and you want to organize a birthday party.		
2. You have made a list of children you want to invite.		
3. You plan to ask the children during the break.		
4. The break starts.		
5. You walk toward the children that you want to invite.		

Story 2	**Scary**	**Non-Scary**
1. You come home from school and in the hall you hear voices of people you don't know.		
2. Your mother calls you in.		
3. An unknown man and woman are sitting in the living room.		
4. Your mother introduces you to these people.		
5. Mother fetches coffee in the kitchen and you stay in the room with this unknown man and woman.		

Story 3	**Scary**	**Non-Scary**
1. You have decided to join a sporting club.		
2. You are in the changing room of the sporting club for the first time.		
3. There you see a group of children waiting in a row.		
4. You don't know any of them.		
5. They all look at you.		

Story 4	Scary	Non-Scary
1. There is a new boy in your class.		
2. You know him from nursery school and you don't like him.		
3. In the past, he has bullied you once or twice.		
4. In class, he whispers: "You just wait! I will get you later!"		
5. After school, he comes to you and pushes you.		

Story 5	Scary	Non-Scary
1. You are going on holiday. Your parents have told you that you are going to a campsite where there will be a lot of other children.		
2. You have just arrived and you walk around the campsite to see where everything is.		
3. You see a group of children.		
4. They are a few years older than you are.		
5. They walk towards you.		

Story 6	Scary	Non-Scary
1. When school is over, the teacher asks you to stay.		
2. While he is talking in the hall, you are waiting in the classroom.		
3. He comes in and takes a seat in front of you.		
4. He says that he wants to talk with you.		
5. Then he asks you whether you are willing to give a small presentation next week.		

Story 7	Scary	Non-Scary
1. You have new neighbours with a boy/girl (opposite sex) of your age.		
2. You are playing in the street and you see that the door of the new neighbours opens.		
3. That boy/girl comes out of the house.		
4. He/she walks toward you.		
5. He/she asks whether you can come to play inside.		

Thank you for taking part in our research project.

As part of the research, we would be grateful if you could fill out the following short questionnaires. There are no right or wrong answers, so please answer as honestly as possible. Mark only one response for each item and try to make sure you answer every question.

About Your Child

Name:

Date of Birth:

Gender: Male / Female

Ethnic Group :
Please indicate the option that best describes your child's ethnic group or background

White
1. English/Welsh/Scottish/Northern Irish/British
2. Irish
3. Gypsy or Irish Traveller
4. Any other White background, please describe

Mixed/Multiple ethnic groups
5. White and Black Caribbean
6. White and Black African
7. White and Asian
8. Any other Mixed/Multiple ethnic background, please describe

Asian/Asian British
9. Indian
10. Pakistani
11. Bangladeshi
12. Chinese
13. Any other Asian background, please describe

Black/ African/Caribbean/Black British
14. African
15. Caribbean
16. Any other Black/African/Caribbean background, please describe

Other ethnic group
17. Arab
18. Any other ethnic group, please describe:

About You

Name:

Date of Birth:

Relationship to Child:

Ethnic Group:
Please indicate the option that best describes your ethnic group or background

White
1. English/Welsh/Scottish/Northern Irish/British
2. Irish
3. Gypsy or Irish Traveller
4. Any other White background, please describe

Mixed/Multiple ethnic groups
5. White and Black Caribbean
6. White and Black African
7. White and Asian
8. Any other Mixed/Multiple ethnic background, please describe

Asian/Asian British
9. Indian
10. Pakistani
11. Bangladeshi
12. Chinese
13. Any other Asian background, please describe

Black/ African/Caribbean/Black British
14. African
15. Caribbean
16. Any other Black/African/Caribbean background, please describe

Other ethnic group
17. Arab
18. Any other ethnic group, please describe:

Please indicate the highest level of academic qualification you have gained:	None NVQ / GNVQ GCSEs / O Levels AS Levels / A Levels Diploma Bachelor's Degree Postgraduate Certificate / Diploma Master's Degree PhD
Please indicate your current work status:	Homemaker Working (full time) Working (part time) Student Volunteer Unemployed Disability / medical leave Maternity / Paternity leave
Please indicate the category which corresponds to the total yearly income of your entire household:	£0 - £9999 £10,000 - £14,999 £15,000 - £19,999 £20,000 – £29,999 £30,000 - £39,999 £40,000 - £49,999 £50,000 - £74,999 £75,000 - £99,999 £100,000 - £124,999 £125,000 - £149,999 £150,000 or more

Thank you! Please continue to fill out the questionnaires.

Please indicate how much the following problems have bothered you during the past week:

1	I am afraid of people in authority	Not at all	A little bit	Somewhat	Very much	Extremely
2	I am bothered by blushing in front of people	Not at all	A little bit	Somewhat	Very much	Extremely
3	Parties and social events scare me	Not at all	A little bit	Somewhat	Very much	Extremely
4	I avoid talking to people I don't know	Not at all	A little bit	Somewhat	Very much	Extremely
5	Being criticized scares me a lot	Not at all	A little bit	Somewhat	Very much	Extremely
6	Fear of embarrassment causes me to avoid doing things or speaking to people	Not at all	A little bit	Somewhat	Very much	Extremely
7	Sweating in front of people causes me distress	Not at all	A little bit	Somewhat	Very much	Extremely
8	I avoid going to parties	Not at all	A little bit	Somewhat	Very much	Extremely
9	I avoid activities in which I am the centre of attention	Not at all	A little bit	Somewhat	Very much	Extremely
10	Talking to strangers scares me	Not at all	A little bit	Somewhat	Very much	Extremely
11	I avoid having to give speeches	Not at all	A little bit	Somewhat	Very much	Extremely
12	I would do anything to avoid being criticized	Not at all	A little bit	Somewhat	Very much	Extremely
13	Heart palpitations bother me when I am around people	Not at all	A little bit	Somewhat	Very much	Extremely

14	I am afraid of doing things when people might be watching	Not at all	A little bit	Somewhat	Very much	Extremely
15	Being embarrassed or looking stupid is among my worst fears	Not at all	A little bit	Somewhat	Very much	Extremely
16	I avoid speaking to anyone in authority	Not at all	A little bit	Somewhat	Very much	Extremely
17	Trembling or shaking in front of others is distressing to me	Not at all	A little bit	Somewhat	Very much	Extremely

Please indicate how often you have been bothered by the following problems over the last 2 weeks:

	Not at all	Several days	More than half the days	Nearly every day
Feeling nervous, anxious or on edge	0	1	2	3
Not being able to stop or control worrying	0	1	2	3
Worrying too much about different things	0	1	2	3
Trouble relaxing	0	1	2	3
Being so restless that it is hard to sit still	0	1	2	3
Becoming easily annoyed or irritable	0	1	2	3
Feeling afraid as if something awful might happen	0	1	2	3

Here are some short descriptions of situations that you might find yourself in, in which it is not quite clear what is happening. Please read the descriptions and then answer the questions by circling a number.

1. Not long after starting your new job your boss asks to see you.

Think about why this happened to you. How likely are you to think that:

a) They want to make sure you have settled in alright

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) You haven't been doing the job properly

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

2. When you get home you find a message to contact a relative as soon as possible.

Think about why this happened to you. How likely are you to think that:

a) Somebody has died

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) They want to invite you over

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

3. You feel under a great deal of pressure and find it difficult to manage everything you have to do

Think about why this happened to you. How likely are you to think that:

a) You are getting to the point where you won't be able to cope

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) There are just too many things to do in the time available

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

4. You feel short of breath.

Think about why this happened to you. How likely are you to think that:

a) You are coming down with flu

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) You are about to stop breathing

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

5. You are at a party and notice that some people are looking in your direction.

Think about why this happened to you. How likely are you to think that:

a) They are being friendly and want you to join them

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) They are criticising you

---

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

6. A member of your family is late arriving home

Think about why this happened to you. How likely are you to think that:

a) They have had a serious accident on the way home

---

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) It took longer than usual to get home

---

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

7. You suddenly feel confused and have difficulty thinking straight

Think about why this happened to you. How likely are you to think that:

a) You are coming down with a cold

---

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) You are going out of your mind

---

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

8. You are talking to an acquaintance, who, briefly looks out of the window.

Think about why this happened to you. How likely are you to think that:

c) Something outside has caught their attention

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

d) You are being boring

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

9. You have agreed to organise a big social event for someone in your family. You wake in the night thinking about it.

Think about why this happened to you. How likely are you to think that:

a) You are excited by the challenge, and are thinking about how to make it a success

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) Something is bound to go wrong

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

10. Your heart is beating quickly and pounding

Think about why this happened to you. How likely are you to think that:

a) There is something wrong with your heart

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) You are feeling excited

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

11. You have visitors round for a meal and they leave sooner than expected

Think about why this happened to you. How likely are you to think that:

a) They had to go somewhere else

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) They were bored, and weren't enjoying themselves

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

12. A crisis comes up during the day and you can't immediately think what to do

Think about why this happened to you. How likely are you to think that:

a) You won't be able to deal with the problem

---

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

b) It is an unusual situation which you haven't encountered before

---

0 1 2 3 4 5 6 7 8 9 10

I would not think that at all *I would definitely think that*

Now here are some descriptions of situations that *your child* might find him/herself in. S/he might have been in some of these situations before. For others, you might have to imagine what it would be like for him/her to be in that situation. The important thing is that you think about what your child would really think in that situation and what s/he would really do in that situation. As above, please read the descriptions and then answer the questions by circling a number.

1. Your child notices at school one day that his/her favourite book is missing

Think about your child in this situation. How likely is s/he to think that:

a) Someone has stolen the book

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) S/he left the book at home

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

2. Your child sees the school head teacher walking around the playground. The head teacher has been asking other children where your child is.

Think about your child in this situation. How likely is s/he to think that:

a) The head teacher has a message for him/her

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) The head teacher thinks s/he has done something wrong

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

3. Your child is staying over at a friend's house and their parents seem to be very angry.

Think about your child in this situation. How likely is s/he to think that:

a) They had an argument and are upset with each other

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) They don't want him/her to be there and are angry at him/her

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

4. Your child sees a group of children from another class playing a great game. When s/he walks over to join in they are laughing.

Think about your child in this situation. How likely is s/he to think that:

a) One of them has told a nasty joke about him/her

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) They are laughing about something in the game

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

5. Your child arranges to have a party at 4 o'clock and by half past 4 no one has arrived.

Think about your child in this situation. How likely is s/he to think that:

a) No-one wants to come to the party

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) They are running a little late

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

6. Your child is showing his/her school project in front of the class and two children at the back of the class are giggling.

Think about your child in this situation. How likely is s/he to think that:

a) They are laughing at something stupid that s/he said

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) One of them told a joke and they are laughing at that

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

7. *If you don't have a dog just pretend you do for this next situation.*

Your child is playing inside and your dog runs to the door and starts to bark and growl.

Think about your child in this situation. How likely is s/he to think that:

a) There is another dog walking past outside

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) There is someone s/he doesn't know trying to get into the house

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

8. On the way to school your child starts to feel sick in the tummy.

Think about your child in this situation. How likely is s/he to think that:

a) S/he ate some bad food and is going to be really sick at school

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) S/he didn't have enough breakfast and is just feeling hungry

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

9. Your child is lying in bed at night when he/she hears a big crash in the house.

Think about your child in this situation. How likely is s/he to think that:

a) Someone has dropped something on the floor

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

b) One of his/her parents has fallen and is hurt

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

10. Your child is at a friend's house and the phone rings in the middle of the night.

Think about your child in this situation. How likely is s/he to think that:

c) There is an emergency at home

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

d) It is a wrong number

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

11. Your child is walking to a friend's house and a big dog comes up to him/her.

Think about your child in this situation. How likely is s/he to think that:

e) The dog wants to sniff him/her and have a stroke

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

f) The dog is going to bite him/her

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

12. Your child is reading and cannot see the words properly.

Think about your child in this situation. How likely is s/he to think that:

g) His/her eyes are tired

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

h) There is something wrong with his/her eyes.

0 1 2 3 4 5 6 7 8 9 10

S/he would not think that at all *S/he would definitely think that*

All done – thank you!

Appendix 2.11. Child feedback questionnaire

A project on thinking about social situations

My Feedback

It is really helpful for us to know your thoughts and feelings about our programme. This helps us to know what went well, and what we could do better next time.

Please fill out these questions by circling a number from 1-5. There are no right or wrong answers, just answer truthfully.

1. How helpful did you find the programme?

1	2	3	4	5
Not at All 		A little bit 		Very Helpful 

2. How much did you enjoy the programme?

1	2	3	4	5
Not at All 		A little bit 		A lot 

3. How did you find filling out the questionnaires before and after the programme?

1	2	3	4	5
Didn't like it at All / it was boring 		It was fine 		Really liked it / it was really interesting 

4. Has it changed the way you feel in situations with other children?

1	2	3	4	5
I feel less confident / happy 		I feel the same 		I feel more confident / happy 

5. What was the best thing about the programme?

……
……
……
……

6. What was the least good thing about the programme?

……
……
……
……

7. Any other comments?

……
……
……
……

Well done! Thank you!

Appendix 2.12. Parent feedback questionnaire

Parent Feedback Questionnaire

It would be really helpful for us to find out your thoughts and feelings about the programme and taking part in our study. This will help us to find out what works well and what we could do differently in the future. Please fill out the form below by indicating one response for each question. Please answer as honestly and truthfully as possible.

1. How helpful did you find the programme overall?

0 1 2 3 4 5 6 7 8 9 10

Not at all *Moderately* *A great deal*

2. How much did you enjoy the programme overall?

0 1 2 3 4 5 6 7 8 9 10

Not at all *Moderately* *A great deal*

3. Thinking about the programme, how much do you feel it has *positively* impacted on the following (please circle)?:

	Not at all	*A little*	*Moderately*	*A lot*	*A great deal*
Your child's understanding of social situations	1	2	3	4	5
Your child's ability to respond positively to social situations	1	2	3	4	5
Your child's worries about social situations	1	2	3	4	5
Your understanding of social situations	1	2	3	4	5
Your ability to respond positively to social situations	1	2	3	4	5

Your worries about social situations	1	2	3	4	5
Your understanding of your child's thoughts/feelings/behaviour in social situations	1	2	3	4	5
Your communication with your child	1	2	3	4	5

4. Was the programme the right length (2 weeks)?

0 1 2 3 4 5 6 7 8 9 10

Should have been shorter *Right length* *Should have been longer*

5. Was there the right number of stories each day (10 stories)?

0 1 2 3 4 5 6 7 8 9 10

Should have been fewer *Right number* *Should have been more*

6. Did you complete the activities on all the days? If not, why not?

……

……

……

……

7. Is there anything that would have made the programme easier to complete?

……

……

……

……

8. Did you mind filling out the questionnaires before and after the programme?

Not at all	*A little*	*Moderately*	*A lot*	*A great deal*
1	2	3	4	5

9. Did you find it interesting filling out the questionnaires before and after the programme?

Not at all	*A little*	*Moderately*	*A lot*	*A great deal*
1	2	3	4	5

10. Did you find the study meeting(s) at school helpful?

Not at all	*A little*	*Moderately*	*A lot*	*A great deal*	*I couldn't attend*
1	2	3	4	5	N/A

11. Is there anything that would have made it easier for you to attend the study meetings?

……

……

……

……

12. What have you found most interesting/helpful about the programme/study?

……

……

……

……

13. Is there anything that you disliked about the programme/study, or anything that you recommend we do differently?

……

……

……

……

……

14. **Are you / is your child doing anything differently because of your participation in the programme / study?**

……

……

……

……

15. **Any other comments?**

……

……

……

……

……

……

Thank you for your feedback – all done!

Appendix 2.13. School feedback questionnaire

A project on children's thinking about social situations

Questionnaire for Schools

It would be really helpful for us to find out a bit about your school and your thoughts about being involved in our study. This will help us to find out what works well and what we could do differently in the future. Please fill out the form below on behalf of your school, as accurately and honestly as possible.

Feedback on the project:

	Not at all	A little	Moderately	A lot	A great deal
We enjoyed being part of the project	1	2	3	4	5
We found it interesting being part of the project	1	2	3	4	5
We enjoyed having the researcher come in to talk to children about the project and do the initial questionnaire	1	2	3	4	5
The study meetings were interesting/helpful	1	2	3	4	5
The study meetings were easy to organise	1	2	3	4	5
Pupils have benefitted from being part of the project	1	2	3	4	5
The school has benefitted from being part of the project	1	2	3	4	5

What have you found most interesting/helpful about being involved in the study?

……
……
……
……
……
……
……

Is there anything that you disliked about the study, or anything that you recommend we do differently?

……
……
……
……
……
……
……

Any other comments?

……
……
……
……
……
……
……

Thank you for your feedback!